



# WASHINGTON STATE

## Joint Aquatic Resources Permit Application (JARPA) Form<sup>1,2</sup> [\[help\]](#)

USE BLACK OR BLUE INK TO ENTER ANSWERS IN THE WHITE SPACES BELOW.



US Army Corps  
of Engineers®  
Seattle District

AGENCY USE ONLY

Date received:

Agency reference #: \_\_\_\_\_

Tax Parcel #(s): \_\_\_\_\_  
\_\_\_\_\_

### Part 1—Project Identification

1. Project Name (A name for your project that you create. Examples: Smith's Dock or Seabrook Lane Development) [\[help\]](#)

Swinomish Ditch Crossing Remediation

### Part 2—Applicant

The person and/or organization responsible for the project. [\[help\]](#)

2a. Name (Last, First, Middle)

Chow, Dan

2b. Organization (If applicable)

Trans Mountain Pipeline (Puget Sound) LLC

2c. Mailing Address (Street or PO Box)

7815 Shellmont Street

2d. City, State, Zip

Burnaby, B.C. V5A 4S9

2e. Phone (1)

2f. Phone (2)

2g. Fax

2h. E-mail

(604) 268-3008

Dan\_Chow@transmountain.com

<sup>1</sup>Additional forms may be required for the following permits:

- If your project may qualify for Department of the Army authorization through a Regional General Permit (RGP), contact the U.S. Army Corps of Engineers for application information (206) 764-3495.
- Not all cities and counties accept the JARPA for their local Shoreline permits. If you need a Shoreline permit, contact the appropriate city or county government to make sure they accept the JARPA.

<sup>2</sup>To access an online JARPA form with [\[help\]](#) screens, go to

[http://www.epermitting.wa.gov/site/alias\\_resourcecenter/jarpa\\_jarpa\\_form/9984/jarpa\\_form.aspx](http://www.epermitting.wa.gov/site/alias_resourcecenter/jarpa_jarpa_form/9984/jarpa_form.aspx).

## Part 3—Authorized Agent or Contact

Person authorized to represent the applicant about the project. (Note: Authorized agent(s) must sign 11b of this application.) [\[help\]](#)

<b>3a.</b> Name (Last, First, Middle)			
Heimbigner, Dan			
<b>3b.</b> Organization (If applicable)			
Whatcom Environmental Services			
<b>3c.</b> Mailing Address (Street or PO Box)			
228 E Champion Street, suite 101			
<b>3d.</b> City, State, Zip			
Bellingham, WA 98225			
<b>3e.</b> Phone (1)	<b>3f.</b> Phone (2)	<b>3g.</b> Fax	<b>3h.</b> E-mail
(360) 752-9571		(360) 752-9573	dheimbigner@whatcomenvironmental.com

## Part 4—Property Owner(s)

Contact information for people or organizations owning the property(ies) where the project will occur. Consider both **upland and aquatic** ownership because the upland owners may not own the adjacent aquatic land. [\[help\]](#)

- ☐ Same as applicant. (Skip to Part 5.)
- ☐ Repair or maintenance activities on existing rights-of-way or easements. (Skip to Part 5.)
- ☐ There are multiple upland property owners. Complete the section below and fill out [JARPA Attachment A](#) for each additional property owner.
- ☐ Your project is on Department of Natural Resources (DNR)-managed aquatic lands. If you don't know, contact the DNR at (360) 902-1100 to determine aquatic land ownership. If yes, complete [JARPA Attachment E](#) to apply for the Aquatic Use Authorization.

<b>4a.</b> Name (Last, First, Middle)			
<b>4b.</b> Organization (If applicable)			
Swinomish Indian Tribal Community (US Govt.Holding)			
<b>4c.</b> Mailing Address (Street or PO Box)			
11404 Moorage Way			
<b>4d.</b> City, State, Zip			
La Conner, WA 98257			
<b>4e.</b> Phone (1)	<b>4f.</b> Phone (2)	<b>4g.</b> Fax	<b>4h.</b> E-mail
360-466-7280			

## Part 5–Project Location(s)

Identifying information about the property or properties where the project will occur. [\[help\]](#)

- ☐ There are multiple project locations (e.g. linear projects). Complete the section below and use [JARPA Attachment B](#) for each additional project location.

<b>5a.</b> Indicate the type of ownership of the property. (Check all that apply.) <a href="#">[help]</a>			
<input type="checkbox"/> Private			
<input type="checkbox"/> Federal			
<input type="checkbox"/> Publicly owned (state, county, city, special districts like schools, ports, etc.)			
<input checked="" type="checkbox"/> Tribal			
<input type="checkbox"/> Department of Natural Resources (DNR) – managed aquatic lands (Complete <a href="#">JARPA Attachment E</a> )			
<b>5b.</b> Street Address (Cannot be a PO Box. If there is no address, provide other location information in 5p.) <a href="#">[help]</a>			
<b>5c.</b> City, State, Zip (If the project is not in a city or town, provide the name of the nearest city or town.) <a href="#">[help]</a>			
Anacortes, WA 98221			
<b>5d.</b> County <a href="#">[help]</a>			
Skagit			
<b>5e.</b> Provide the section, township, and range for the project location. <a href="#">[help]</a>			
<b>¼ Section</b>	<b>Section</b>	<b>Township</b>	<b>Range</b>
NE	11	34	02
<b>5f.</b> Provide the latitude and longitude of the project location. <a href="#">[help]</a>			
<ul style="list-style-type: none"><li>Example: 47.03922 N lat. / -122.89142 W long. (Use decimal degrees - NAD 83)</li></ul>			
48.452257 N lat. / -122.516255 W long (decimal degrees - WGS84)			
<b>5g.</b> List the tax parcel number(s) for the project location. <a href="#">[help]</a>			
<ul style="list-style-type: none"><li>The local county assessor's office can provide this information.</li></ul>			
P20270			
<b>5h.</b> Contact information for all adjoining property owners. (If you need more space, use <a href="#">JARPA Attachment C.</a> ) <a href="#">[help]</a>			
<b>Name</b>	<b>Mailing Address</b>	<b>Tax Parcel # (if known)</b>	
Swinomish Indian Tribal Community (US Govt.Holding)	11404 Moorage Way La Conner, WA 98257	P20263, P20269, P20271	

<b>5i.</b> List all wetlands on or adjacent to the project location. <a href="#">[help]</a>
Wetland A (on project location)
<b>5j.</b> List all waterbodies (other than wetlands) on or adjacent to the project location. <a href="#">[help]</a>
Swinomish Channel (approx. 180 feet east of project), Fornsby Slough (approx. 1,300 feet south of project)
<b>5k.</b> Is any part of the project area within a 100-year floodplain? <a href="#">[help]</a>
<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Don't know
<b>5l.</b> Briefly describe the vegetation and habitat conditions on the property. <a href="#">[help]</a>
Open grassy fields and wetland. Scattered bushes and scattered trees to the south. The project will occur in a man-made drainage ditch running along the eastern edge of Wetland A at the toe of the Swinomish Channel levee.
<b>5m.</b> Describe how the property is currently used. <a href="#">[help]</a>
A pipeline easement runs through the property. The pipeline easement is regularly mowed and maintained.
<b>5n.</b> Describe how the adjacent properties are currently used. <a href="#">[help]</a>
North: open fields/wetland with additional utility easements, gravel roads, SR20 and the Swinomish Channel Bridge East: Swinomish Channel levee South: open fields, gravel roads, ditches, large gravel berms, and rock piles West: open fields/wetland, gravel roads, ditches, large gravel berms, and rock piles
<b>5o.</b> Describe the structures (above and below ground) on the property, including their purpose(s) and current condition. <a href="#">[help]</a>
There are no above ground structures. A buried pipeline runs through the site.
<b>5p.</b> Provide driving directions from the closest highway to the project location, and attach a map. <a href="#">[help]</a>
From SR 20 westbound, turn right onto S March Point Road, immediately turn right onto Casino Drive, at the roundabout take the 1 <sup>st</sup> exit onto Knudson Lane, at the next roundabout take the 4 <sup>th</sup> exit to stay on Knudson lane, turn right onto unnamed gravel road beneath the SR 20 bridge, immediately turn right onto another unnamed gravel road, drive approximately 0.2 miles. The project is located across the field to the east. (see attachment A)



## Part 6–Project Description

**6a.** Briefly summarize the overall project. You can provide more detail in 6b. [\[help\]](#)

Installation of two flexible concrete mats (8x20 ft each) over an existing pipeline on an easement running through the Swinomish Reservation ag lands area, to provide cover and protection in a drainage ditch. Work will be completed per Nationwide Permit 12 "Utility Line Activities". Design drawings provided (see attachment B)

**6b.** Describe the purpose of the project and why you want or need to perform it. [\[help\]](#)

The pipeline has only eight inches of soil cover in a man-made drainage ditch and the existing cover provides no significant protection from third party impacts. Drainage ditch runs along the western toe of the levee.

**6c.** Indicate the project category. (Check all that apply) [\[help\]](#)

- ☐ Commercial
 ☐ Residential
 ☐ Institutional
 ☐ Transportation
 ☐ Recreational  
☒ Maintenance
 ☐ Environmental Enhancement

**6d.** Indicate the major elements of your project. (Check all that apply) [\[help\]](#)

- |  |  |  |  |
|--|--|--|--|
| <input type="checkbox"/> Aquaculture<br><input type="checkbox"/> Bank Stabilization<br><input type="checkbox"/> Boat House<br><input type="checkbox"/> Boat Launch<br><input type="checkbox"/> Boat Lift<br><input type="checkbox"/> Bridge<br><input type="checkbox"/> Bulkhead<br><input type="checkbox"/> Buoy<br><input type="checkbox"/> Channel Modification | <input type="checkbox"/> Culvert<br><input type="checkbox"/> Dam / Weir<br><input type="checkbox"/> Dike / Levee / Jetty<br><input type="checkbox"/> Ditch<br><input type="checkbox"/> Dock / Pier<br><input type="checkbox"/> Dredging<br><input type="checkbox"/> Fence<br><input type="checkbox"/> Ferry Terminal<br><input type="checkbox"/> Fishway | <input type="checkbox"/> Float<br><input type="checkbox"/> Floating Home<br><input type="checkbox"/> Geotechnical Survey<br><input type="checkbox"/> Land Clearing<br><input type="checkbox"/> Marina / Moorage<br><input type="checkbox"/> Mining<br><input type="checkbox"/> Outfall Structure<br><input type="checkbox"/> Piling/Dolphin<br><input type="checkbox"/> Raft | <input type="checkbox"/> Retaining Wall (upland)<br><input type="checkbox"/> Road<br><input type="checkbox"/> Scientific Measurement Device<br><input type="checkbox"/> Stairs<br><input type="checkbox"/> Stormwater facility<br><input type="checkbox"/> Swimming Pool<br><input checked="" type="checkbox"/> Utility Line |
|--|--|--|--|

☒ Other: Temporary excavation in a wetland.

<b>6e.</b> Describe how you plan to construct each project element checked in 6d. Include specific construction methods and equipment to be used. <a href="#">[help]</a> <ul style="list-style-type: none"> <li>Identify where each element will occur in relation to the nearest waterbody.</li> <li>Indicate which activities are within the 100-year floodplain.</li> </ul>
<p>Construction equipment is expected to include a 300 series excavator and material delivery trucks. Construction will occur per the attached construction drawings.</p> <p>Step 1) Use 300 series excavator to expose existing 16 inch pipeline.</p> <p>Step 2) Perform standard pipe integrity inspection and re-wrap pipe.</p> <p>Step 3) Backfill to proper compaction.</p> <p>Step 4) Install flexible concrete mat using excavator and key into surrounding area.</p> <p>Step 5) Restore area, stabilize soils, and place seed to re-vegetate.</p>
<b>6f.</b> What are the anticipated start and end dates for project construction? (Month/Year) <a href="#">[help]</a> <ul style="list-style-type: none"> <li>If the project will be constructed in phases or stages, use <a href="#">JARPA Attachment D</a> to list the start and end dates of each phase or stage.</li> </ul>
Start Date: <u>August 1, 2019</u> End Date: <u>August 31, 2019</u> <input type="checkbox"/> See JARPA Attachment D
<b>6g.</b> Fair market value of the project, including materials, labor, machine rentals, etc. <a href="#">[help]</a>
\$60,000
<b>6h.</b> Will any portion of the project receive federal funding? <a href="#">[help]</a> <ul style="list-style-type: none"> <li>If <b>yes</b>, list each agency providing funds.</li> </ul>
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't know

## Part 7–Wetlands: Impacts and Mitigation

- ☒ Check here if there are wetlands or wetland buffers on or adjacent to the project area.  
(If there are none, skip to Part 8.) [\[help\]](#)

<b>7a.</b> Describe how the project has been designed to avoid and minimize adverse impacts to wetlands. <a href="#">[help]</a>
<input type="checkbox"/> Not applicable
<p>The proposed pipeline capping project would impact Wetland A and its 100-foot buffer; however, these impacts are small and predominantly temporary in nature. The permanent impacts to the wetland and would be at the bottom of an existing ditch and not significantly change site hydrology. Moreover, the project would address safety concerns due to the exposed gas pipeline. By adhering to Tribal Code minimization strategies, employing appropriate BMPs and stormwater treatment, placement of the “Armorflex concrete blocks mattress” cap is not expected to result in a net loss of wetland or buffer function.</p> <ul style="list-style-type: none"> <li>- Excavation and impervious surfaces will be as small as possible;</li> <li>- Standard erosion control BMPs will be applied;</li> <li>- Work will be completed during the dry season;</li> <li>- Work duration will be limited;</li> <li>- The excavated area will be restored with native backfill and re-vegetated to the maximum extent possible.</li> </ul> <p>A Determination of Non-Significance and a Shorelines and Sensitive Areas Permit has been approved by the Swinomish Indian Tribal Community. (see attachment C and attachment D)</p> <p>A wetland delineation report is attached (see attachment E)</p>

<b>7b. Will the project impact wetlands?</b> <a href="#">[help]</a>						
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know						
<b>7c. Will the project impact wetland buffers?</b> <a href="#">[help]</a>						
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know						
<b>7d. Has a wetland delineation report been prepared?</b> <a href="#">[help]</a>						
<ul style="list-style-type: none"> <li><b>If Yes</b>, submit the report, including data sheets, with the JARPA package.</li> </ul>						
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						
<b>7e. Have the wetlands been rated using the Western Washington or Eastern Washington Wetland Rating System?</b> <a href="#">[help]</a>						
<ul style="list-style-type: none"> <li><b>If Yes</b>, submit the wetland rating forms and figures with the JARPA package.</li> </ul>						
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't know						
<b>7f. Have you prepared a mitigation plan to compensate for any adverse impacts to wetlands?</b> <a href="#">[help]</a>						
<ul style="list-style-type: none"> <li><b>If Yes</b>, submit the plan with the JARPA package and answer 7g.</li> <li><b>If No, or Not applicable</b>, explain below why a mitigation plan should not be required.</li> </ul>						
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know						
<b>7g. Summarize what the mitigation plan is meant to accomplish, and describe how a watershed approach was used to design the plan.</b> <a href="#">[help]</a>						
The Environmental Protection Plan (attached) is meant to guide construction personnel to prevent avoidable impacts and minimize unavoidable impacts.						
<b>7h. Use the table below to list the type and rating of each wetland impacted, the extent and duration of the impact, and the type and amount of mitigation proposed. Or if you are submitting a mitigation plan with a similar table, you can state (below) where we can find this information in the plan.</b> <a href="#">[help]</a>						
Activity (fill, drain, excavate, flood, etc.)	Wetland Name <sup>1</sup>	Wetland type and rating category <sup>2</sup>	Impact area (sq. ft. or Acres)	Duration of impact <sup>3</sup>	Proposed mitigation type <sup>4</sup>	Wetland mitigation area (sq. ft. or acres)
Excavate/backfill	Wetland A	Depressional	425 sq ft	14 days	R	425 sq ft
Excavate/backfill	Wetland A Buffer	Depressional	215 sq ft	14 days	R	215 sq ft
Impervious surface	Wetland A	Depressional	32 sq ft	permanent	NA	NA
Impervious surface	Wetland A Buffer	Depressional	16 sq ft	permanent	NA	NA
<sup>1</sup> If no official name for the wetland exists, create a unique name (such as "Wetland 1"). The name should be consistent with other project documents, such as a wetland delineation report. <sup>2</sup> Ecology wetland category based on current Western Washington or Eastern Washington Wetland Rating System. Provide the wetland rating forms with the JARPA package. <sup>3</sup> Indicate the days, months or years the wetland will be measurably impacted by the activity. Enter "permanent" if applicable. <sup>4</sup> Creation (C), Re-establishment/Rehabilitation (R), Enhancement (E), Preservation (P), Mitigation Bank/In-lieu fee (B)						
Page number(s) for similar information in the mitigation plan, if available: <u>p.15 of Wetland Delineation Report</u>						

<p><b>7i.</b> For all filling activities identified in 7h, describe the source and nature of the fill material, the amount in cubic yards that will be used, and how and where it will be placed into the wetland. <a href="#">[help]</a></p>
<p>Fill material will be used as backfill to replace material removed in step #1 of the project (see section 6e). Backfilling will be completed using a 300 series excavator and hand tools.</p> <p>47 yards of sand and gravel will be used as backfill to create a stable base and to surround the pipe. Material will be sourced locally.</p> <p>60 yds of excavated native soils will be re-used for the remaining backfill requirements.</p>
<p><b>7j.</b> For all excavating activities identified in 7h, describe the excavation method, type and amount of material in cubic yards you will remove, and where the material will be disposed. <a href="#">[help]</a></p>
<p>Excavating will be completed at the location the pipe crosses beneath the drainage ditch using a 300 series excavator and hand tools.</p> <p>Excavate 90 yds of soils – Excavated soils will be used as backfill. Excess will be properly disposed of offsite.</p>

## Part 8–Waterbodies (other than wetlands): Impacts and Mitigation

In Part 8, “waterbodies” refers to non-wetland waterbodies. (See Part 7 for information related to wetlands.) [\[help\]](#)

☒ Check here if there are waterbodies on or adjacent to the project area. (If there are none, skip to Part 9.)

<p><b>8a.</b> Describe how the project is designed to avoid and minimize adverse impacts to the aquatic environment. <a href="#">[help]</a></p>
<p><input type="checkbox"/> Not applicable</p>
<p>The nearest downstream waterbodies include the Fornsby Slough network and the Swinomish Channel. No activities will occur in Fornsby Slough or Swinomish Channel. Sediment control BMPs will be used and water discharged from the site will be monitored to ensure the project does not discharge turbid water into the either waterbody.</p> <p>The Swinomish Channel is located approximately 180 feet west of the project site. The channel is physically separated from the project site by the earthen levee. Water from the work area flows south through the drainage ditch at the toe of the levee for approximately 1,300 feet, passing through two culverts, the second of which is an 18 inch culvert with a backflow preventing tide gate. The tide gate blocks Fornsby Slough from back-flowing into the drainage ditch during high tides. Fornsby slough exchanges water with the Swinomish Channel. Additional hydrology details can be found in the April 6, 2018 Letter Brief prepared by Indicator Engineering (See attachment F)</p> <p>A Shorelines and Sensitive Areas Permit has been approved by the Swinomish Indian Tribal Community. (see attachment D)</p> <p>An Environmental Protection Plan has been prepared for the project. (see attachment G)</p>
<p><b>8b.</b> Will your project impact a waterbody or the area around a waterbody? <a href="#">[help]</a></p>
<p><input type="checkbox"/> Yes    <input checked="" type="checkbox"/> No</p>

**8c.** Have you prepared a mitigation plan to compensate for the project's adverse impacts to non-wetland waterbodies? [\[help\]](#)

- **If Yes**, submit the plan with the JARPA package and answer 8d.
- **If No, or Not applicable**, explain below why a mitigation plan should not be required.

☐ Yes    ☒ No    ☐ Don't know

No activities will occur in Fornsby Slough nor Swinomish Channel. Sediment control BMPs will be used and water discharged from the site will be monitored to ensure the project does not discharge turbid water into the either waterbody.

**8d.** Summarize what the mitigation plan is meant to accomplish. Describe how a watershed approach was used to design the plan.

- If you already completed 7g you do not need to restate your answer here. [\[help\]](#)

N/A

**8e.** Summarize impact(s) to each waterbody in the table below. [\[help\]](#)

Activity (clear, dredge, fill, pile drive, etc.)	Waterbody name <sup>1</sup>	Impact location <sup>2</sup>	Duration of impact <sup>3</sup>	Amount of material (cubic yards) to be placed in or removed from waterbody	Area (sq. ft. or linear ft.) of waterbody directly affected
N/A					

<sup>1</sup> If no official name for the waterbody exists, create a unique name (such as "Stream 1") The name should be consistent with other documents provided.

<sup>2</sup> Indicate whether the impact will occur in or adjacent to the waterbody. If adjacent, provide the distance between the impact and the waterbody and indicate whether the impact will occur within the 100-year flood plain.

<sup>3</sup> Indicate the days, months or years the waterbody will be measurably impacted by the work. Enter "permanent" if applicable.

**8f.** For all activities identified in 8e, describe the source and nature of the fill material, amount (in cubic yards) you will use, and how and where it will be placed into the waterbody. [\[help\]](#)

N/A

**8g.** For all excavating or dredging activities identified in 8e, describe the method for excavating or dredging, type and amount of material you will remove, and where the material will be disposed. [\[help\]](#)

N/A

## Part 9—Additional Information

Any additional information you can provide helps the reviewer(s) understand your project. Complete as much of this section as you can. It is ok if you cannot answer a question.

**9a.** If you have already worked with any government agencies on this project, list them below. [\[help\]](#)

Agency Name	Contact Name	Phone	Most Recent Date of Contact
Swinomish Indian Tribal Community	Scott Andrews	(360) 466-7299	3/19/19

**9b.** Are any of the wetlands or waterbodies identified in Part 7 or Part 8 of this JARPA on the Washington Department of Ecology's 303(d) List? [\[help\]](#)

- If **Yes**, list the parameter(s) below.
- If you don't know, use Washington Department of Ecology's Water Quality Assessment tools at: <https://ecology.wa.gov/Water-Shorelines/Water-quality/Water-improvement/Assessment-of-state-waters-303d>.

☒ Yes   ☐ No

A segment of the Swinomish channel approximately 1.6 miles south of the project site is on the 303(d) list for Benzo(a)anthracene and Chrysene (Listing ID 12367 and 12371).

**9c.** What U.S. Geological Survey Hydrological Unit Code (HUC) is the project in? [\[help\]](#)

- Go to <http://cfpub.epa.gov/surf/locate/index.cfm> to help identify the HUC.

171100020403

**9d.** What Water Resource Inventory Area Number (WRIA #) is the project in? [\[help\]](#)

- Go to <https://ecology.wa.gov/Water-Shorelines/Water-supply/Water-availability/Watershed-look-up> to find the WRIA #.

WRIA #3

<p><b>9e.</b> Will the in-water construction work comply with the State of Washington water quality standards for turbidity? <a href="#">[help]</a></p> <ul style="list-style-type: none"> <li>Go to <a href="https://ecology.wa.gov/Water-Shorelines/Water-quality/Freshwater/Surface-water-quality-standards/Criteria">https://ecology.wa.gov/Water-Shorelines/Water-quality/Freshwater/Surface-water-quality-standards/Criteria</a> for the standards.</li> </ul>
<p><input checked="" type="checkbox"/> Yes   <input type="checkbox"/> No   <input type="checkbox"/> Not applicable</p>
<p><b>9f.</b> If the project is within the jurisdiction of the Shoreline Management Act, what is the local shoreline environment designation? <a href="#">[help]</a></p> <ul style="list-style-type: none"> <li>If you don't know, contact the local planning department.</li> <li>For more information, go to: <a href="https://ecology.wa.gov/Water-Shorelines/Shoreline-coastal-management/Shoreline-coastal-planning/Shoreline-laws-rules-and-cases">https://ecology.wa.gov/Water-Shorelines/Shoreline-coastal-management/Shoreline-coastal-planning/Shoreline-laws-rules-and-cases</a>.</li> </ul>
<p><input type="checkbox"/> Urban   <input type="checkbox"/> Natural   <input type="checkbox"/> Aquatic   <input type="checkbox"/> Conservancy   <input checked="" type="checkbox"/> Other: <u>High Intensity Development (Swinomish Classification)</u></p>
<p><b>9g.</b> What is the Washington Department of Natural Resources Water Type? <a href="#">[help]</a></p> <ul style="list-style-type: none"> <li>Go to <a href="http://www.dnr.wa.gov/forest-practices-water-typing">http://www.dnr.wa.gov/forest-practices-water-typing</a> for the Forest Practices Water Typing System.</li> </ul>
<p><input checked="" type="checkbox"/> Shoreline   <input type="checkbox"/> Fish   <input type="checkbox"/> Non-Fish Perennial   <input type="checkbox"/> Non-Fish Seasonal</p>
<p><b>9h.</b> Will this project be designed to meet the Washington Department of Ecology's most current stormwater manual? <a href="#">[help]</a></p> <ul style="list-style-type: none"> <li><b>If No</b>, provide the name of the manual your project is designed to meet.</li> </ul>
<p><input checked="" type="checkbox"/> Yes   <input type="checkbox"/> No</p>
<p>Name of manual: _____</p>
<p><b>9i.</b> Does the project site have known contaminated sediment? <a href="#">[help]</a></p> <ul style="list-style-type: none"> <li><b>If Yes</b>, please describe below.</li> </ul>
<p><input type="checkbox"/> Yes   <input checked="" type="checkbox"/> No</p>
<div style="height: 100px;"></div>
<p><b>9j.</b> If you know what the property was used for in the past, describe below. <a href="#">[help]</a></p>
<p>Unknown</p>
<p><b>9k.</b> Has a cultural resource (archaeological) survey been performed on the project area? <a href="#">[help]</a></p> <ul style="list-style-type: none"> <li><b>If Yes</b>, attach it to your JARPA package.</li> </ul>
<p><input type="checkbox"/> Yes   <input checked="" type="checkbox"/> No</p>

**9l.** Name each species listed under the federal Endangered Species Act that occurs in the vicinity of the project area or might be affected by the proposed work. [\[help\]](#)

An Official Species List provided by the Washington Fish and Wildlife Office was reviewed. None of the species on the list are expected to be adversely affected by the proposed work.

NOAA fisheries ESA Critical Habitat Maps were reviewed. The project has been designed to ensure adverse impacts to species are insignificant by using a combination of fish work windows, physical separation from species habitat, and appropriate best management practices to prevent water pollution.

See *ESA Species and Critical Habitat Evaluation – Trans Mountain Pipeline Swinomish Ditch Crossing Remediation* (see attachment H).

**9m.** Name each species or habitat on the Washington Department of Fish and Wildlife's Priority Habitats and Species List that might be affected by the proposed work. [\[help\]](#)

According to the Priority Habitat and Species list, the project site occurs within Little Brown Bat habitat and Big Brown Bat habitat.

## Part 10–SEPA Compliance and Permits

Use the resources and checklist below to identify the permits you are applying for.

- Online Project Questionnaire at <http://apps.oria.wa.gov/opas/>.
- Governor's Office for Regulatory Innovation and Assistance at (800) 917-0043 or [help@oria.wa.gov](mailto:help@oria.wa.gov).
- For a list of addresses to send your JARPA to, click on [agency addresses for completed JARPA](#).

**10a.** Compliance with the State Environmental Policy Act (SEPA). (Check all that apply.) [\[help\]](#)

- For more information about SEPA, go to <https://ecology.wa.gov/regulations-permits/SEPA-environmental-review>.

☐ A copy of the SEPA determination or letter of exemption is included with this application.

☐ A SEPA determination is pending with \_\_\_\_\_ (lead agency). The expected decision date is \_\_\_\_\_.

☐ I am applying for a Fish Habitat Enhancement Exemption. (Check the box below in 10b.) [\[help\]](#)

☐ This project is exempt (choose type of exemption below).

☐ Categorical Exemption. Under what section of the SEPA administrative code (WAC) is it exempt?

\_\_\_\_\_

☐ Other: \_\_\_\_\_

☒ SEPA is pre-empted by federal law.



**10b.** Indicate the permits you are applying for. (Check all that apply.) [\[help\]](#)

**LOCAL GOVERNMENT**

**Local Government Shoreline permits:**

- ☐ Substantial Development    ☐ Conditional Use    ☐ Variance  
☐ Shoreline Exemption Type (explain): \_\_\_\_\_

**Other City/County permits:**

- ☐ Floodplain Development Permit    ☐ Critical Areas Ordinance

**STATE GOVERNMENT**

**Washington Department of Fish and Wildlife:**

- ☐ Hydraulic Project Approval (HPA)    ☐ Fish Habitat Enhancement Exemption – [Attach Exemption Form](#)

**Washington Department of Natural Resources:**

- ☐ Aquatic Use Authorization  
Complete [JARPA Attachment E](#) and submit a check for \$25 payable to the Washington Department of Natural Resources.  
**Do not send cash.**

**Washington Department of Ecology:**

- ☐ Section 401 Water Quality Certification

**FEDERAL AND TRIBAL GOVERNMENT**

**United States Department of the Army (U.S. Army Corps of Engineers):**

- ☒ Section 404 (discharges into waters of the U.S.)    ☐ Section 10 (work in navigable waters)

**United States Coast Guard:**

- ☐ General Bridge Act Permit    ☐ Private Aids to Navigation (for non-bridge projects)

**United States Environmental Protection Agency:**

- ☐ Section 401 Water Quality Certification (discharges into waters of the U.S.) on tribal lands where tribes do not have treatment as a state (TAS)

**Tribal Permits:** (Check with the tribe to see if there are other tribal permits, e.g., Tribal Environmental Protection Act, Shoreline Permits, Hydraulic Project Permits, or other in addition to CWA Section 401 WQC)

- ☒ Section 401 Water Quality Certification (discharges into waters of the U.S.) where the tribe has treatment as a state (TAS).

## Part 11—Authorizing Signatures

Signatures are required before submitting the JARPA package. The JARPA package includes the JARPA form, project plans, photos, etc. [\[help\]](#)

### 11a. Applicant Signature (required) [\[help\]](#)

I certify that to the best of my knowledge and belief, the information provided in this application is true, complete, and accurate. I also certify that I have the authority to carry out the proposed activities, and I agree to start work only after I have received all necessary permits.

I hereby authorize the agent named in Part 3 of this application to act on my behalf in matters related to this application. DC (initial)

By initialing here, I state that I have the authority to grant access to the property. I also give my consent to the permitting agencies entering the property where the project is located to inspect the project site or any work related to the project. DC (initial)

DAN CHOW  
Applicant Printed Name

[Signature]  
Applicant Signature

MAY 17, 2019  
Date

### 11b. Authorized Agent Signature [\[help\]](#)

I certify that to the best of my knowledge and belief, the information provided in this application is true, complete, and accurate. I also certify that I have the authority to carry out the proposed activities and I agree to start work only after all necessary permits have been issued.

DAN HEIMBIGNER  
Authorized Agent Printed Name

[Signature]  
Authorized Agent Signature

MAY 17, 2019  
Date

### 11c. Property Owner Signature (if not applicant) [\[help\]](#)

Not required if project is on existing rights-of-way or easements (provide copy of easement with JARPA).

I consent to the permitting agencies entering the property where the project is located to inspect the project site or any work. These inspections shall occur at reasonable times and, if practical, with prior notice to the landowner.

\_\_\_\_\_  
Property Owner Printed Name

\_\_\_\_\_  
Property Owner Signature

\_\_\_\_\_  
Date

18 U.S.C §1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly falsifies, conceals, or covers up by any trick, scheme, or device a material fact or makes any false, fictitious, or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious, or fraudulent statement or entry, shall be fined not more than \$10,000 or imprisoned not more than 5 years or both.

If you require this document in another format, contact the Governor's Office for Regulatory Innovation and Assistance (ORIA) at (800) 917-0043. People with hearing loss can call 711 for Washington Relay Service. People with a speech disability can call (877) 833-6341. ORIA publication number: ORIA-16-011 rev. 09/2018

### **JARPA Attachments:**

*Attachment A – Driving Directions Map*

*Attachment B – Design Drawings*

*Attachment C – Determination of Non-Significance*

*Attachment D – Shorelines and Sensitive Areas Permit*

*Attachment E – Wetland Delineation Report*

*Attachment F – April 6, 2018 Letter Brief prepared by Indicator Engineering*

*Attachment G – Environmental Protection Plan*

*Attachment H – ESA Species Evaluation*

*Attachment I – IPaC Species List*

*Attachment J – Pipeline Easement Documentation*

## **ATTACHMENT A**

Driving Directions Map





Swinomish RV Park

Pacific Blanket & Trading Company

Swinomish Casino & Lodge

Chevron Anacortes

Long John Dr

Long John Dr

Swinomish Channel Bridge

Unnamed Road

Google

## **ATTACHMENT B**

Design Drawings

Indicator Engineering PLLC  
7511 Greenwood Ave N #605  
Seattle, WA, 98103  
Tel 206-651-5103  
pflanagan@indicatoreng.com  
www.indicatoreng.com

# INDICATOR ENGINEERING

FEBRUARY 7, 2019

## LETTER BRIEF

**TO:**

**Dan Chow & Richard Chan, Trans Mountain Pipeline (Puget Sound)**

**CC: Dan Heimbigner, Whatcom Environmental Services**

**Via: Email**

**FROM:**

**Pat Flanagan, PE**

**PROJECT: 10034**

**RE: Trans Mountain Pipeline (Puget Sound) Burlington Anacortes – Swinomish Ditch Crossing**

---

This letter is to provide you the JARPA design package for the risk remediation of the Trans Mountain Pipeline (TMP) Puget Sound Burlington Anacortes MB 16" crossing of the Swinomish drainage ditch, located west of the Swinomish Slough at approximately MP 6.02. The design utilizes an ArmorFlex concrete block mattress to provide cover and protection for the exposed section.

As discussed the current design assumes that a small compacted gravel foundation would be built to provide support and stability for the ArmorFlex concrete blocks mattress. No geotechnical analysis has been completed, however we recommend a geotechnical engineer be on-site during construction to oversee the foundation compaction.

Design quantities and cost estimate are being revised and will be provided in the next few days.

We look forward to continuing the design of the Swinomish ditch crossing remediation. If you have any questions, comments or would like to discuss next steps, please contact Pat Flanagan via email or at (206) 651-5103.

Respectfully Submitted,

Indicator Engineering PLLC

**Prepared by:**

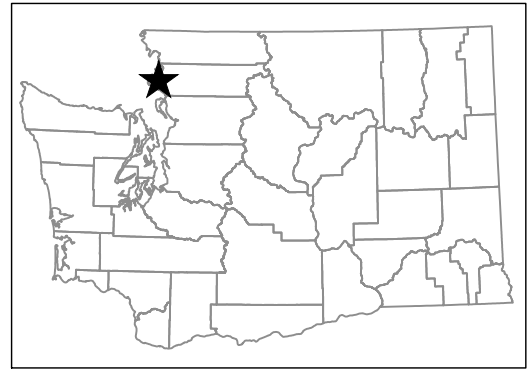


Patrick Flanagan, PE

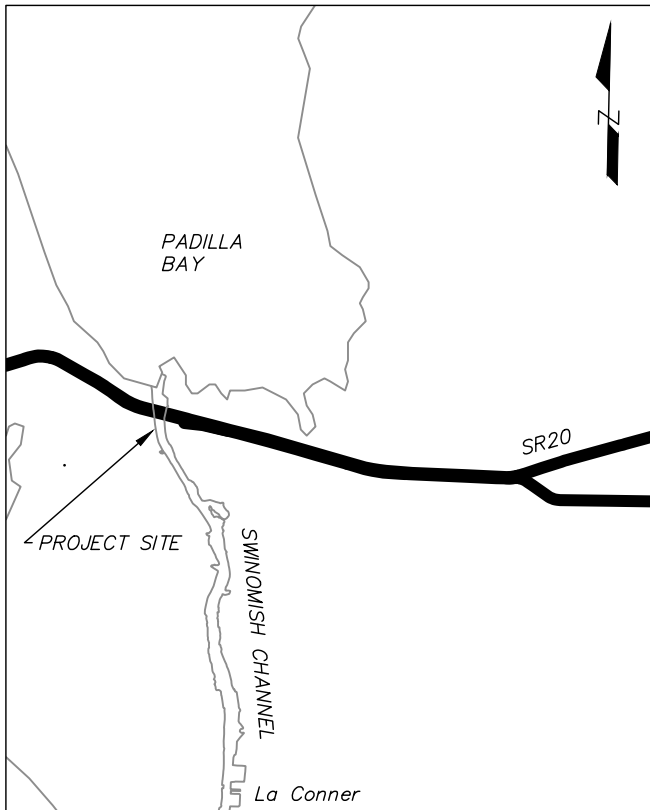
**ENCLOSED: Plans (8 pages) – JARPA format 8.5"x11" 60% level plans for the TMP Swinomish Ditch Crossing Remediation**



# Trans Mountain Pipeline (Puget Sound) Swinomish Ditch Crossing Remediation



WA STATE MAP



VICINITY MAP

## ABBREVIATION LIST

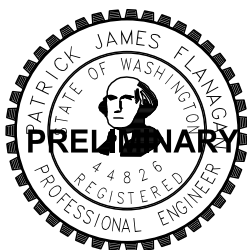
'-FEET

"-INCHES

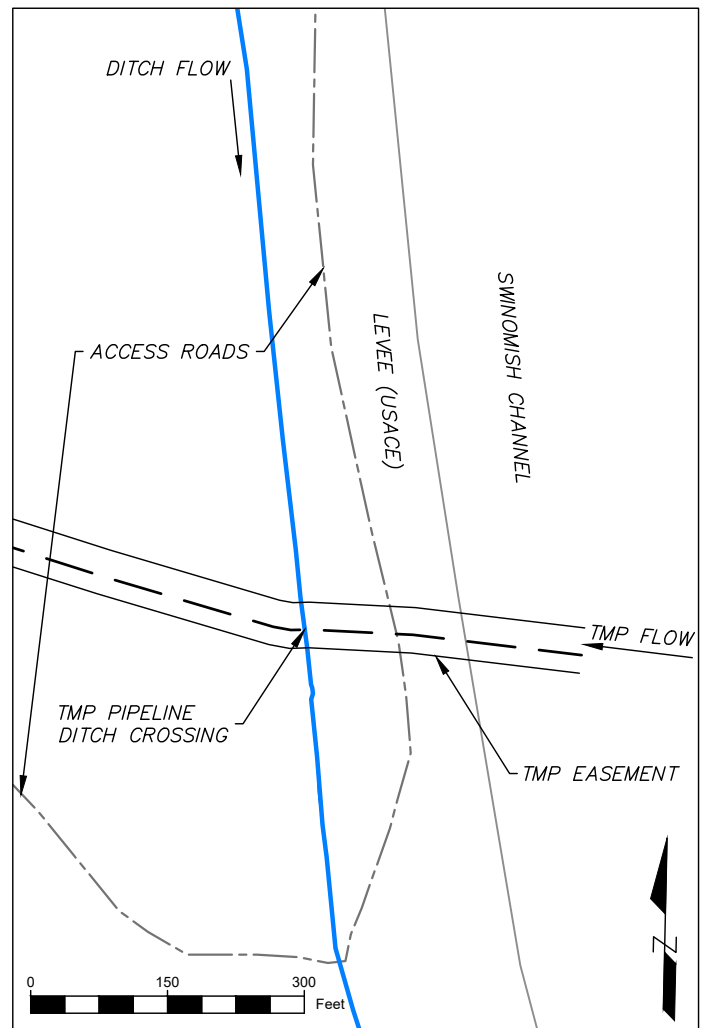
TMP-TRANS MOUNTAIN PIPELINE

TYP-TYPICAL

WS-WATER SURFACE



VERTICAL: LOCAL ASSUMED  
HORIZONTAL: LOCAL ASSUMED



PROJECT OVERVIEW

INDICATOR PROJECT #: 10034

REFERENCE:

APPLICANT:

Trans Mountain Pipeline (Puget Sound)

LOCATION:

1000' South of SR20 and 180'  
West of Swinomish Slough

PROPOSED PROJECT:

Swinomish Ditch Crossing  
Remediation

ADJACENT PROPERTY OWNERS:

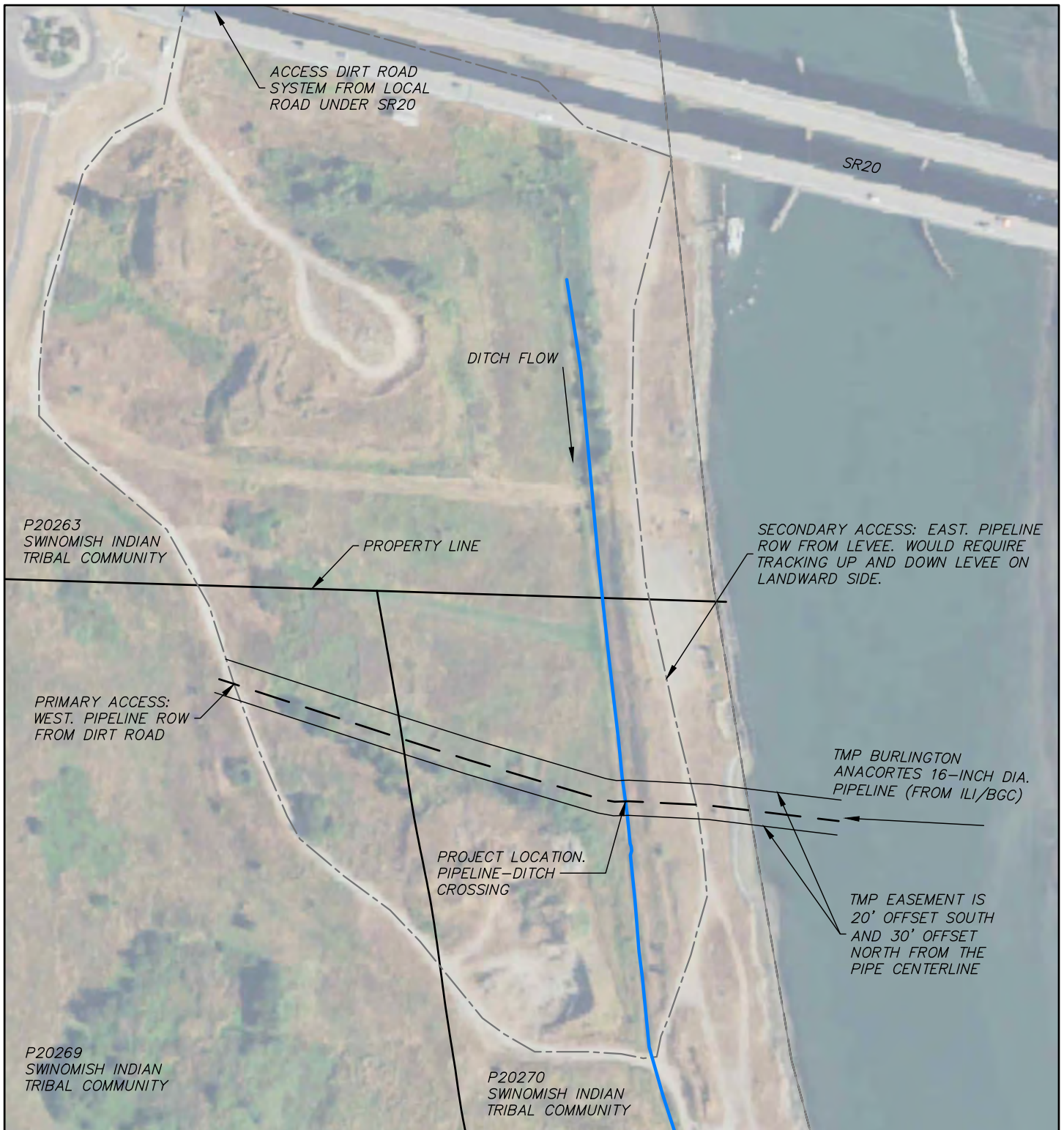
SWINOMISH INDIAN  
TRIBAL COMMUNITY (US  
GOVT. HOLDING)

LAT/LONG: 48.452, -122.516

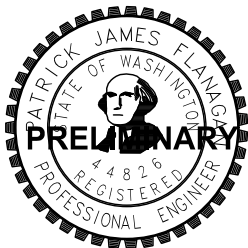
IN:Swinomish Drainage Ditch  
NEAR/AT: Anacortes/La Conner  
COUNTY: Skagit  
STATE: WA

SHEET:01 of 08 DATE: 02/07/19

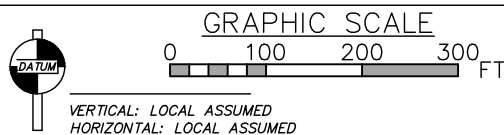




## Access Plan



### TMP PORT DITCH CULVERT REPLACEMENT PLANNING 60% SUBMITTAL



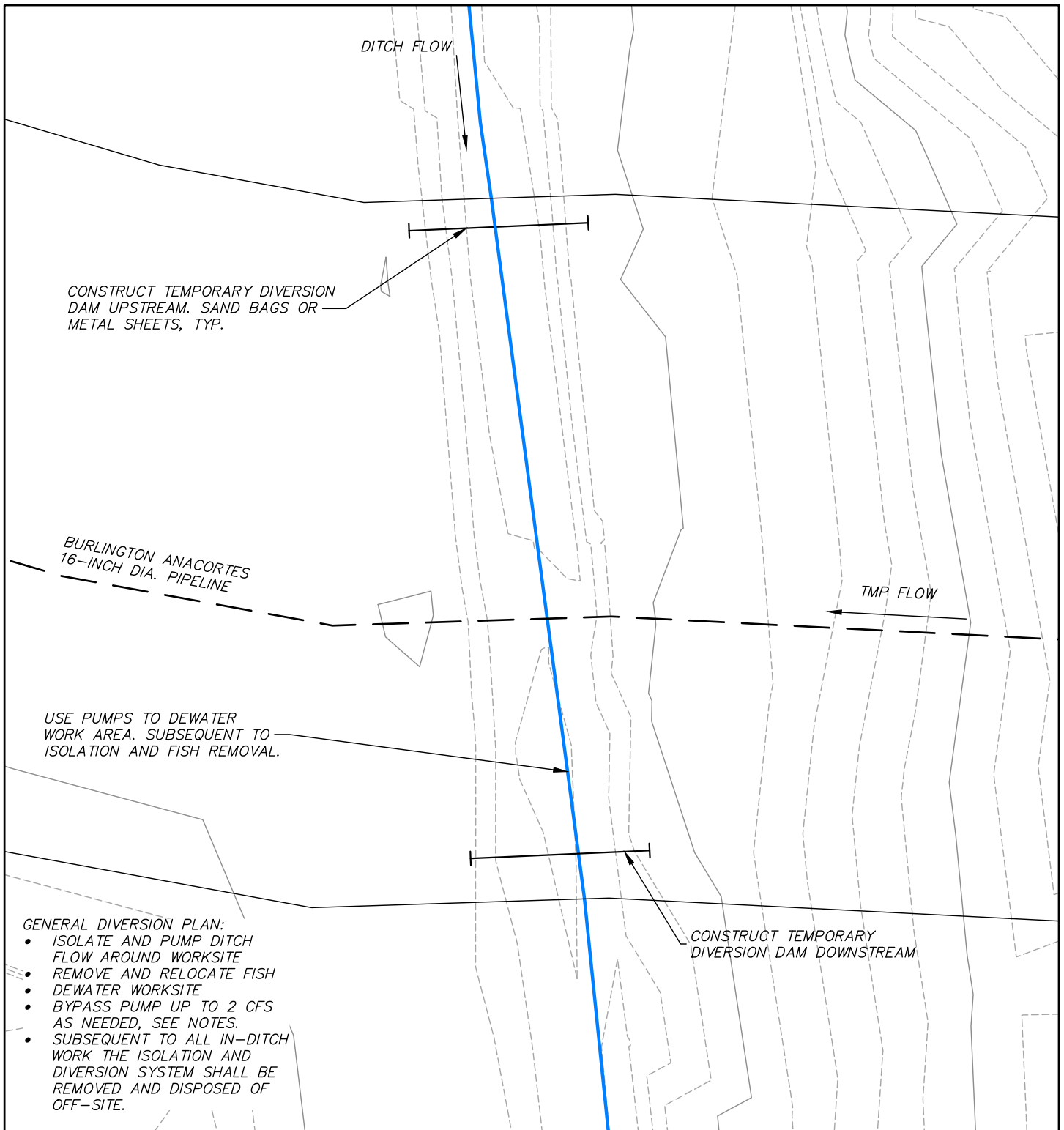
INDICATOR ENG. PROJECT #: 10034

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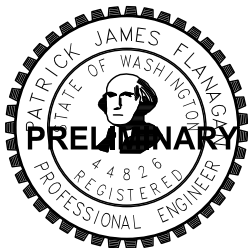
APPLICANT: *Trans Mountain Pipeline*  
PROPOSED PROJECT:  
*Swinomish Ditch Crossing Remediation*

COUNTY: *Skagit County, WA*  
LOCATION: *1000' South of SR20 and  
180' West of Swinomish Slough*

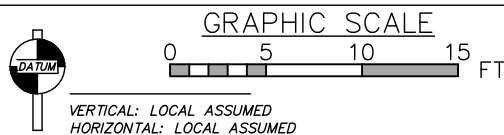
SHEET: *02 of 08*      DATE: *02/07/19*



## Isolation and Diversion Plan



### TMP PORT DITCH CULVERT REPLACEMENT PLANNING 60% SUBMITTAL



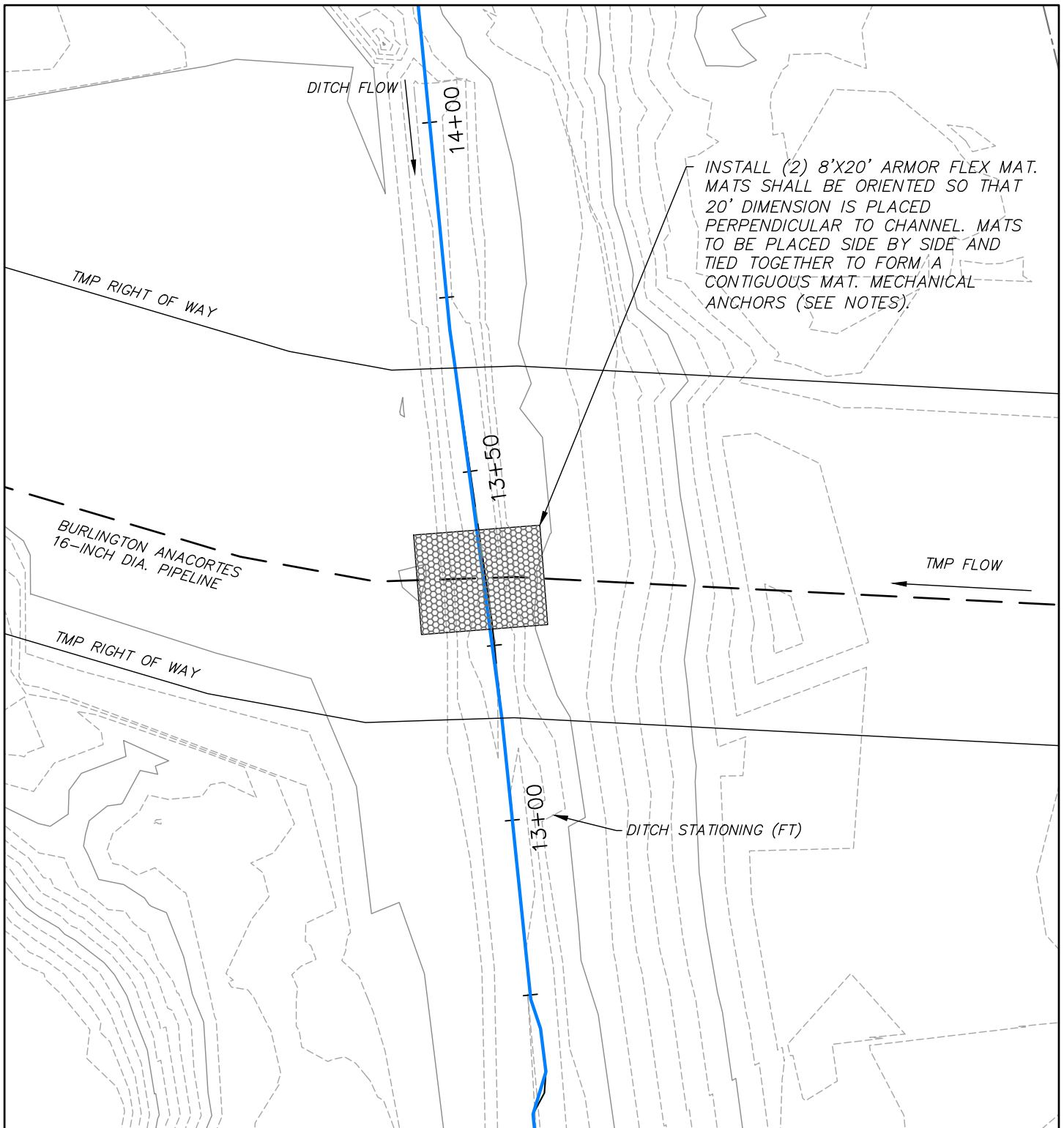
INDICATOR ENG. PROJECT #: 10034

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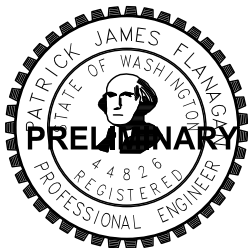
APPLICANT: *Trans Mountain Pipeline*  
PROPOSED PROJECT:  
*Swinomish Ditch Crossing Remediation*

COUNTY: *Skagit County, WA*  
LOCATION: *1000' South of SR20 and  
180' West of Swinomish Slough*

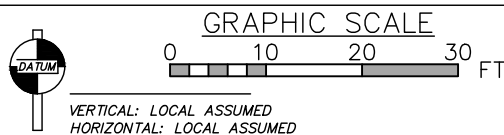
SHEET: *03 of 08* DATE: *02/07/19*



Countermeasures: Plan View



# **TMP PORT DITCH CULVERT REPLACEMENT** **PLANNING 60% SUBMITTAL**



INDICATOR ENG. PROJECT #: 10034

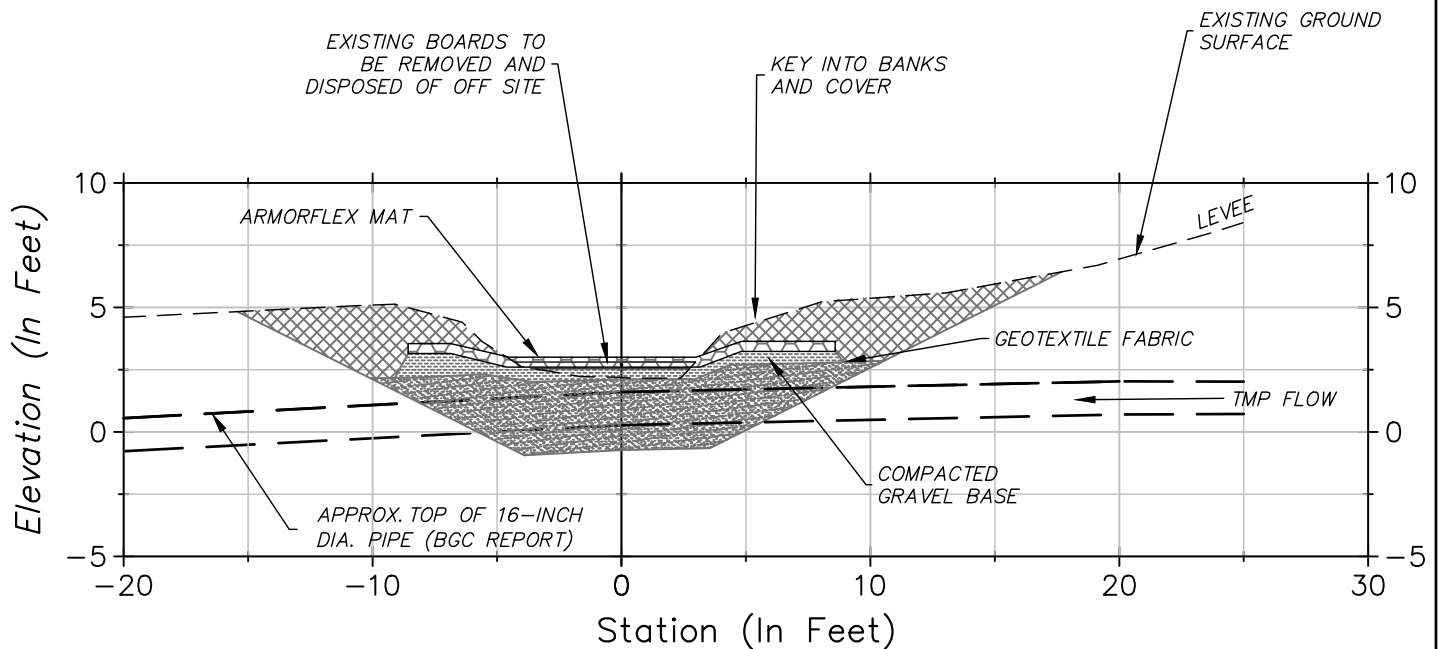
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PROPOSED PROJECT:  
*Swinomish Ditch Crossing Remediation*

COUNTY: *Skagit County, WA*  
LOCATION: *1000' South of SR20 and  
180' West of Swinomish Slough*

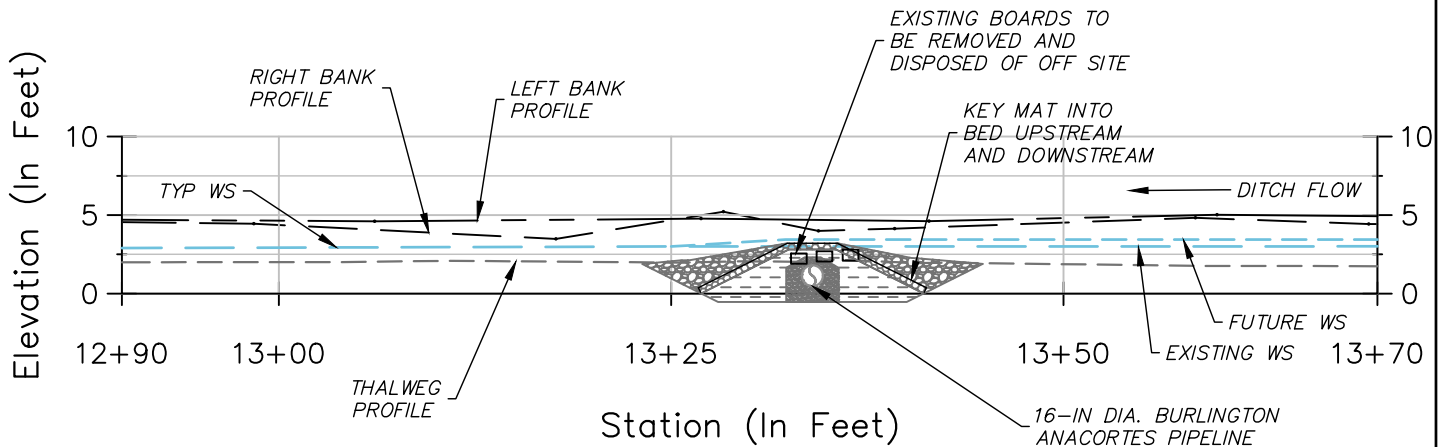
SHEET: *04 of 08*      DATE: *02/07/19*

# SECTION 1

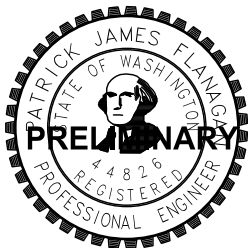


NOTE: PIPE LOCATED AT DITCH. PIPE PROFILE IS APPROX BASED ON PRIOR REMOTE SURVEY, SEE CONSTRUCTION NOTES.

# DITCH PROFILE



## Countermeasures: Sections



## TMP PORT DITCH CULVERT REPLACEMENT PLANNING 60% SUBMITTAL



VERTICAL: LOCAL ASSUMED  
HORIZONTAL: LOCAL ASSUMED

INDICATOR ENG. PROJECT #: 10034

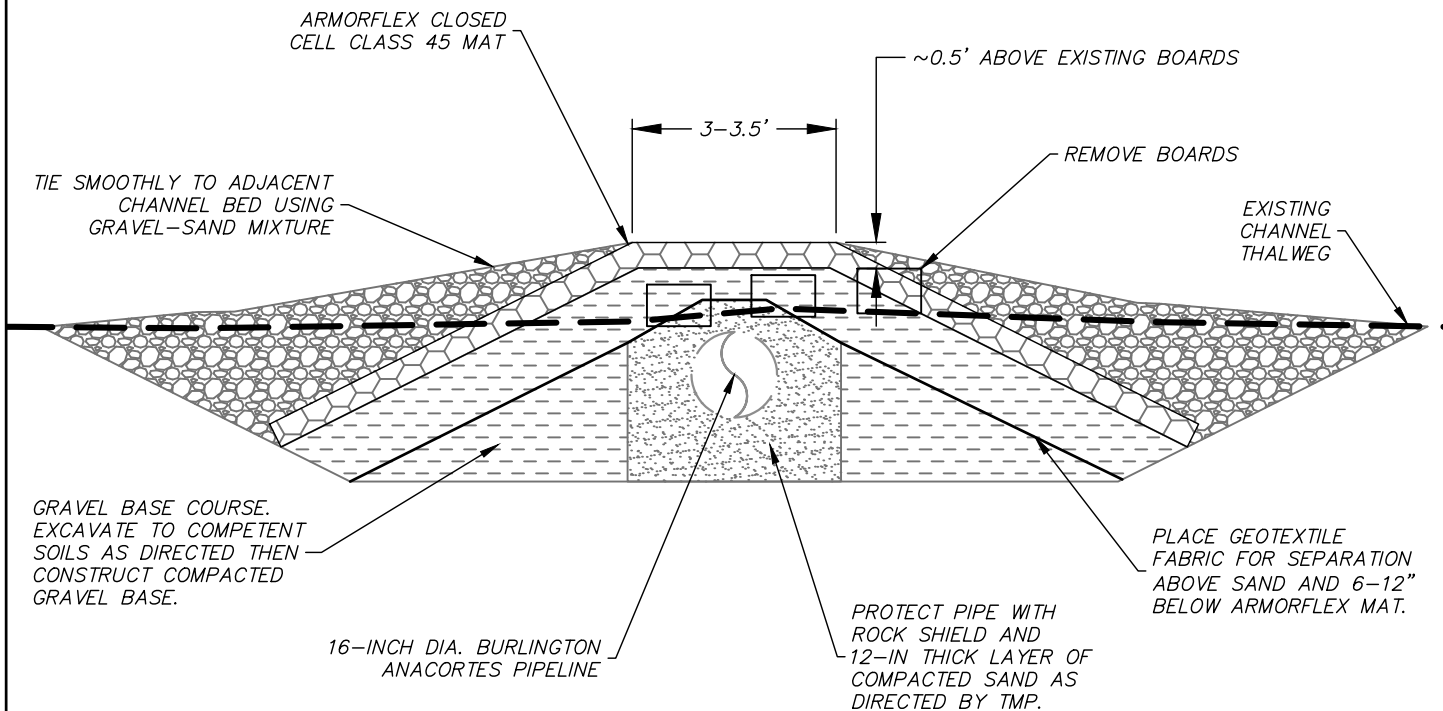
### REFERENCE:

APPLICANT: *Trans Mountain Pipeline*  
PROPOSED PROJECT:  
*Swinomish Ditch Crossing Remediation*

COUNTY: *Skagit County, WA*  
LOCATION: *1000' South of SR20 and  
180' West of Swinomish Slough*

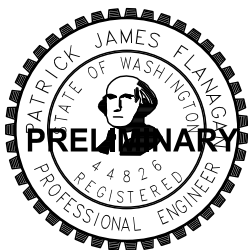
SHEET: *05 of 08*      DATE: *02/07/19*

INSTALL ROCK SHIELD AND ARMOR FLEX MAT. ROCK SHIELD REQUIRED IS TUFF-N-NUFF OR EQUIVALENT. LENGTH OF ROCK SHIELD WILL BE DETERMINED IN FIELD BY TMP. SEE NOTES.



THIS VIEW NOT TO SCALE

## Countermeasures: Details



### TMP PORT DITCH CULVERT REPLACEMENT PLANNING 60% SUBMITTAL



VERTICAL: LOCAL ASSUMED  
HORIZONTAL: LOCAL ASSUMED

INDICATOR ENG. PROJECT #: 10034

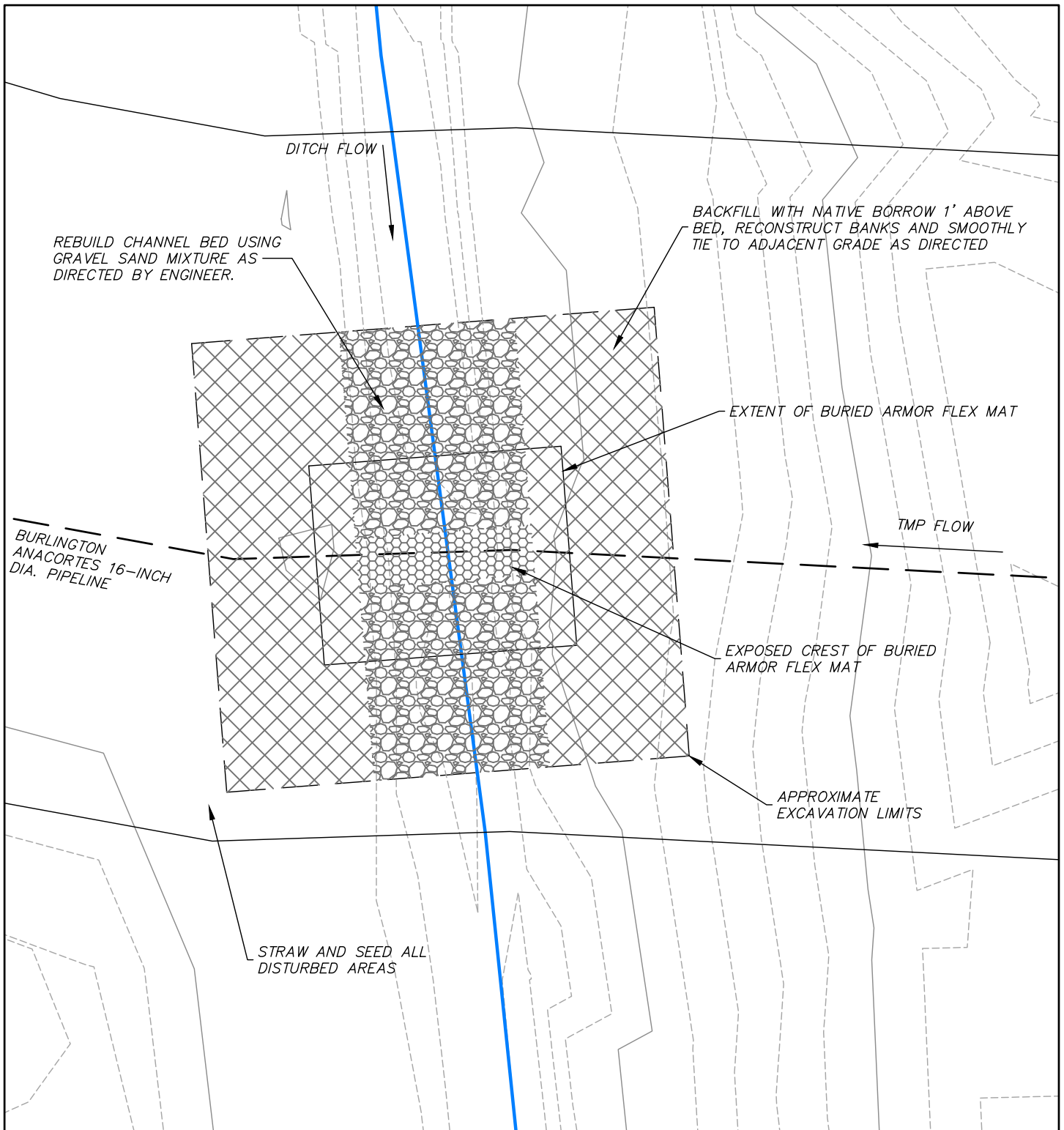
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PROPOSED PROJECT:  
*Swinomish Ditch Crossing Remediation*

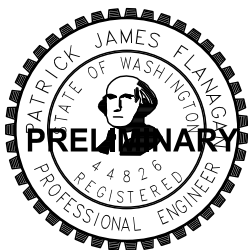
COUNTY: *Skagit County, WA*  
LOCATION: *1000' South of SR20 and  
180' West of Swinomish Slough*

SHEET: *06 of 08*      DATE: *02/07/19*

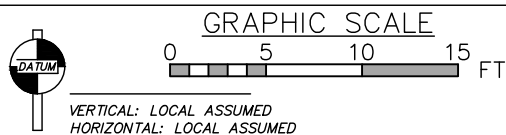




## Restoration Plan



### TMP PORT DITCH CULVERT REPLACEMENT PLANNING 60% SUBMITTAL



INDICATOR ENG. PROJECT #: 10034

#### REFERENCE:

APPLICANT: *Trans Mountain Pipeline*  
PROPOSED PROJECT:  
*Swinomish Ditch Crossing Remediation*

COUNTY: *Skagit County, WA*  
LOCATION: *1000' South of SR20 and  
180' West of Swinomish Slough*

SHEET: 07 of 08      DATE: 02/07/19

## DESIGN NOTES

NOTES AND DESCRIPTION ARE BELOW FOR CERTAIN PROJECT ELEMENTS, MATERIALS AND CONSTRUCTION ACTIVITIES.

### 1. PIPELINE LOCATION AND ESTABLISHMENT

THE PIPELINE LOCATION AND PROFILE SHALL BE DETERMINED AND ESTABLISHED IN FIELD PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITIES.

### 2. WORKSITE ISOLATION AND DEWATERING

PRIOR TO EXCAVATION THE WORKSITE SHALL BE ISOLATED FROM DITCH FLOW THEN DEWATERED. PRIOR TO CONSTRUCTION ACTIVITIES THE CONTRACTOR SHALL SUBMIT A BASIC PLAN SATISFACTORY TO TMP OR THEIR REPRESENTATIVE THAT PROVIDES A METHOD OF ISOLATING AND DIVERTING DITCH FLOW AROUND THE WORK SITE. THE DRAINAGE DITCH CONVEYS RUNOFF FROM RAINFALL AND GROUNDWATER SEEPAGE. ANTICIPATED FLOWS IN THE DITCH ARE UP TO 2 CFS FOR TYPICAL STORMS.

### 3. EXCAVATION

EXCAVATION NEAR THE PIPELINE MUST COMPLY WITH TMP'S SPECIFICATIONS. IF COATING REPAIRS ARE NECESSARY THEN THE PIPE WILL BE REPAIRED AS DIRECTED BY TMP. NO WORK SHALL BEGIN UNTIL THE PIPELINE IS EXPOSED OR DIRECTLY ESTABLISHED WITHIN THE ZONE OF CONSTRUCTION. EXCAVATION SHALL CONTINUE TO COMPETENT SOILS AS DIRECTED, WHICH ARE ANTICIPATED WITHIN 0 TO 5-FT BELOW THE PIPE. SHORING MAY BE REQUIRED DEPENDING ON THE SOILS ENCOUNTERED.

### 4. INSTALL ROCK SHIELD AND PREPARE SUBGRADE

ROCK SHIELD REQUIRED IS TUFF-N-NUFF OR EQUIVALENT. LENGTH OF ROCK SHIELD WILL BE DETERMINED IN FIELD BY TMP. CONSTRUCT COMPACTED FOUNDATION USING GRAVEL BASE COURSE AS DIRECTED, WITH SAND SURROUNDING THE PIPE AS DIRECTED BY TMP. SUBGRADE SHALL BE PREPARED AND COMPACTED TO APPROXIMATELY 6-IN BELOW THE CONCRETE MAT. GEOTEXTILE FABRIC FOR SEPARATION (SPEC. TO BE DETERMINED) SHALL BE PLACED, THEN THE FINAL 6-IN BASE SHALL BE PLACED AND COMPACTED. SUBGRADE MUST BE INSPECTED AND APPROVED PRIOR TO BURIAL AND NEXT PHASE OF WORK.

### 5. PLACE ARMORFLEX CONCRETE BLOCK MAT

PLACE ARMORFLEX CLOSED CLASS 45 MAT ON APPROVED SUBGRADE. ALL BLOCKS OR PREASSEMBLED MATS SHALL BE TIED TOGETHER TO FORM A CONTIGUOUS SINGLE MAT. SUBSEQUENT TO MAT PLACEMENT AND CONNECTION, MECHANICAL SOIL ANCHORS SHALL BE INSTALLED AT ALL FOUR CORNERS, SEAMS, AND MID-SIDE AS DIRECTED.

### 6. BACKFILL CHANNEL BED AND BANKS

FINAL BED AND BANK SURFACES SHALL BE REASONABLY TIED INTO THE ORIGINAL BED SURFACE AT THE UPSTREAM AND DOWNSTREAM ENDS. A GRAVEL-SAND MIXTURE SHALL BE USED FOR THE CHANNEL BED MATERIAL AND FOR THE BANK MATERIAL TO 1 FOOT ABOVE THE CHANNEL BED. NATIVE BORROW WILL BE PLACED TO FINAL GRADE FOR ALL AREAS ABOVE 1 FOOT ABOVE THE CHANNEL BED.

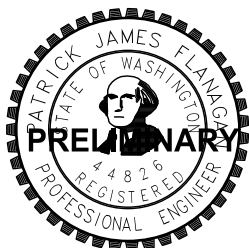
### 6. RESTORATION

TO BE DETERMINED

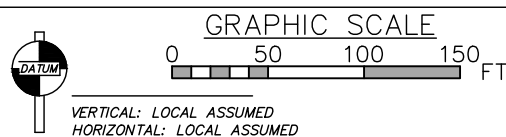
## SURVEY AND BASEMAP NOTES

1. SURVEY DATE: JANUARY 31, 2018 BY INDICATOR ENGINEERING PLLC
2. TOPOGRAPHIC SURVEY EQUIPMENT: TOPCON GPT-3007W TOTAL STATION
3. SURVEY REFERENC: SWINOMISH TRIBE BENCHMARK LOCATED TO SOUTH NEAR TIDE GATES. STATED COORDINATES N: 532896.181, E: 1232478.432, Z: 6.993 (FT)
4. HORIZONTAL DATUM: FEET. LOCAL ASSUMED (APPROX WA-HARN-N-F, ERROR UNKNOWN)
5. VERTICAL DATUM: FEET. LOCAL ASSUMED (APPROX NAVD88, ERROR UNKNOWN)
6. LIDAR WAS USED OUTSIDE OF SURVEY FOR GENERAL CONTOURS. LIDAR DATASET WAS 2006 USGS NORTH PUGET, POINTS.
7. SOFTWARE USED TO GENERATE DEM: CIVIL 3D 2016
8. PROJECTION: WASHINGTON STATE PLANE NORTH
9. PIPELINE LOCATED AT DITCH. REMAINING LOCATION OF PIPELINE BASED ON BGC REPORT (2015)
10. THIS DRAWING AND SURVEY WAS GENERATED EXCLUSIVELY FOR TRANS MOUNTAIN PIPELINE (PUGET SOUND) FOR THE SWINOMISH DRAINAGE DITCH CROSSING. THE DRAWING OR DATA SHOULD NOT BE USED FOR PURPOSES OTHER THAN THOSE INTENDED.

## Construction Notes



## TMP PORT DITCH CULVERT REPLACEMENT PLANNING 60% SUBMITTAL



INDICATOR ENG. PROJECT #: 10034

### REFERENCE:

APPLICANT: *Trans Mountain Pipeline*  
PROPOSED PROJECT:  
*Swinomish Ditch Crossing Remediation*

COUNTY: *Skagit County, WA*  
LOCATION: *1000' South of SR20 and  
180' West of Swinomish Slough*

SHEET: *08 of 08*      DATE: *02/07/19*

## **ATTACHMENT C**

Determination of Non-Significance



**SWINOMISH INDIAN TRIBAL COMMUNITY  
OFFICE OF PLANNING & COMMUNITY DEVELOPMENT**  
11430 Moorage Way • P.O. Box 817 • La Conner, WA 98257  
**TRIBAL ENVIRONMENTAL POLICY ACT (TEPA)**

**DECLARATION OF NON-SIGNIFICANCE**

***PROJECT DESCRIPTION***

Installation of two flexible concrete mat (8x20 ft each) over an existing pipeline on and easement running through the Swinomish Reservation ag lands area, to provide cover and protection in a drainage ditch.

***PROPONENT***

Trans Mountain Pipeline  
7815 Shellmont Street,  
Burnaby, B.C. V5A 4S9

***PROJECT LOCATION***

Swinomish Ag Lands, P#20270 at  
Lat 48.452241 ; lon.-122.515.307

***DECISION***

The Swinomish Office of Planning and Community Development has determined that, this project will not have a probable significant adverse impact on the environment. An Environmental Impact Statement (EIS) is not required under SITC Title 19-01.080(A).

**COMMENTS MUST BE SUBMITTED BY:** 4:00 PM, 10 days after publication.

No action will be taken on this notice for 10 days after publication. Any comments on this declaration should be submitted to the contact person listed below.

**RESPONSIBLE OFFICIAL:** Scott Andrews, Environmental Management Coord.  
**ADDRESS:** P.O. Box 817, La Conner, WA.  
**PHONE:** 466-7280  
**DATE:** March 11, 2019

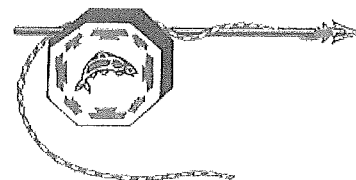
**SIGNATURE:**

  
\_\_\_\_\_  
Scott Andrews, Environmental Management Coordinator

## **ATTACHMENT D**

Shorelines and Sensitive Areas Permit

**Swinomish Indian Tribal Community**  
**Building & Permitting Program**  
**11430 Moorage Way**  
**LaConner, WA 98257**



### ***Shoreline & Sensitive Areas Permit***

**Permit Number: 2277**

**Approval Date: 2/14/2019**

**Printed 3/11/2019**

#### **Applicant**

**Name:** Dan chow

**Company:** Trans Mountain Pipeline (Puget Sound) LLC

**Address:** 7815 Shellmont Street  
 Burnaby BC Canada V5A 4S9

**Role:** Other Agent

**Phone 1:** 604-268-3008 **Phone 2:** 604-268-3000

**Email Address:** dheimbigner@whatcomenvironmental

#### **Parcel**

**Parcel Number:** P20270

**Section:** **Township:**

**Range:**

**Addition:** **Block:**

**Lot:**

**Legal Description:** E 400FT OF LOT 9

**Address:** , **Zoning:** SSA - Natural Shoreline

#### **Owners**

**Name:** SWINOMISH INDIAN TRIBAL COMM **Phone:** 466-7280

**Address:** PO BOX 817

#### **Contractors**

#### **Fees and Receipts**

1_SSA Application Fee	\$50.00
1_SSA Permit Fee	\$150.00
1_TEPA Checklist Review Fee	\$100.00
<b>Total Fees:</b>	<b>\$300.00</b>

**Total Receipts:** **\$300.00**

#### **Conditions**

**Date:** 3/11/2019

**Status:** approved

##### **Additional Conditions:**

Pursuant to Title 19, Chapter 4 of the Swinomish Code (The Shorelines and Sensitive Areas ordinance) the proposal is approved with the following conditions. 1. Obtaining a Tribal permit does not supercede other federal statutes and other regulations that may apply to this project. For all projects within US Army Corps of Engineers jurisdiction, this permit is not valid until either a Corps permit is issued, or documentation is provided showing no such permit is required. 2. If archaeological and/or cultural resources should be uncovered during this project, cease all work, make reasonable effort to protect the discovery and call the Swinomish Cultural Resource Officer to determine proper measures. Josephine Peters, 466-7352, or if not available the Planning Department front desk at 466-7280. A cultural observer will likely be required during any digging. 3. Construction practices shall insure that no off-site impacts shall result from storm water runoff or erosion and

sedimentation from grading activities. The contractor shall employ appropriate temporary storm water control best management practices to contain storm water within the boundaries of the property, including as needed silt fencing or straw wattles, covering unworked soil piles if rain is forecast or they will remain unworked 7 or more days. 4. Dewatering, if needed in the ditch, must be plan prior approved by this office (Swinomish DEP). 5. Chemical storage and any equipment maintenance activity should be confined to the staging area outside the wetlands. Spill kits must be available at the site and all precautions taken to minimize potential of spills. Any spills should be immediately reported to Jim Sande, Swinomish Emergency Coordinator 661-2384 and Kevin Anderson, spill response coordinator, 630-1532. 6. Any in-water work, or work below MHW, shall only occur during the open fish work window – July/16 – Feb/15, unless otherwise specified in the permit.

---

**Permit Information:**

Army Corp Permit:

Existing Use/Structure: Other

Notice #:

Purpose: Utility extension/repair

Fisheries Hydraulic

Other Description: pipeline

Prm:

Zoning:

SSA - Natural  
Shoreline

Start Date:

Aug 1, 2019

Duration

2 years

Dept. of Eco. Approval

No

In Wetland Buffer?

Yes

In Stream Buffer?

No

In Fish-Wildlife Area?

No

In Geo. Hazard Area?

No

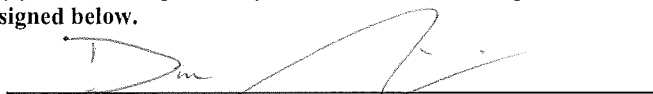
Comments:

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The above named permit holder is not granted any special exemptions from any Tribal regulations concerning the above stated activity and is obligated to abide by Tribal rules, regulations, or ordinances which may affect such an activity. The Tribal Building Official or his designee(s) shall be permitted reasonable access to the property to conduct monitoring and inspections of construction activities and to certify compliance with the conditions of this permit and the Swinomish Uniform Building Code. The above permit holder in receiving such a permit is also agreeing to appear before the Tribal Court if he or she should be issued a citation by a Tribal Officer while being a holder of a valid permit.

This permit is valid for a period not to exceed two (2) years unless specifically stated otherwise in the permit conditions. This permit does not become valid until signed below.

Permittee Signature:



Responsible Tribal Official:



**INSPECTION REQUEST LINE 466-7310**  
**24 HOUR NOTICE REQUIRED FOR ALL INSPECTIONS**

## **ATTACHMENT E**

### Wetland Delineation Report

**SWINOMISH INDIAN TRIBAL COMMUNITY  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
AND US ARMY CORPS OF ENGINEERS  
WETLAND DELINEATION REPORT**

**STATE ROUTE 20 WEST OF THE SWINOMISH SLOUGH  
SKAGIT COUNTY PARCELS P20269, P20263, AND P20269**

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Prepared for Trans Mountain Corporation c/o Dan Heimbigner, Whatcom Environmental  
May 7, 2019



Submitted by:  
Element Solutions  
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Bellingham, WA 98225  
Office | (360) 671-9172  
[info@elementsolutions.org](mailto:info@elementsolutions.org)

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May 7, 2019

**Prepared for:** Trans Mountain Corporation  
c/o Dan Heimbigner,  
Whatcom Environmental  
dheimbigner@whatcomenvironmental.com

**Subject: Swinomish Ditch Crossing Remediation – Swinomish Tribal Community and  
USACE Wetland Delineation Report**  
State Route 20 West of the Swinomish Slough, Swinomish Reservation, WA,  
Skagit County Tax Parcels P20269, P20263, and P20269

---

Dear Trans Mountain Corporation,

Element Solutions has prepared this Wetland Delineation Report for the above tax parcels. This report was compiled using information provided by the client, review of public information, on-site investigation of the study area, and the professional judgment of environmental professionals. The work included scientific assessment and mapping to determine the presence, location, extent, and function of wetlands that occur on and/or adjacent to the subject parcel. Additionally, this report provides recommendations to manage, avoid, minimize, or mitigate the previous potential impacts to wetlands and other waters.

This report is intended to satisfy the reporting requirements specified by the Swinomish Tribal Code Title 19, Chapter 4 and the US Army Corps of Engineers (Seattle District) Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act. The results of the analysis are summarized within the report to inform site plan development and regulatory review.

Should you have any questions concerning this report, please contact us at (360) 671-9172 or at [ppittman@elementsolutions.org](mailto:ppittman@elementsolutions.org).

Paul Pittman, MS, LEG  
Earth and Environmental Sciences Manager - Principal



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## Table of Contents

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<b>1</b>	<b>INTRODUCTION .....</b>	<b>1</b>
1.1	Purpose .....	1
1.1.1	Organization of this report .....	1
1.2	Location and Physiography .....	1
1.3	Proposed Project Action .....	2
1.4	Applicable Environmental Code.....	2
1.4.1	Swinomish Tribal Code.....	2
1.4.2	Federal Regulations .....	2
1.4.3	State Regulations .....	2
1.5	Desktop Characterization of Existing Conditions.....	3
1.5.1	Spatial Data .....	3
1.5.2	Previous Studies and Information .....	3
1.5.3	Summary of Findings.....	4
<b>2</b>	<b>WETLAND ASSESSMENT .....</b>	<b>7</b>
2.1	Guiding Regulations, Standards, and Methods for Assessment.....	7
2.1.1	Standard Methods .....	7
2.2	Changes in Conditions.....	7
2.3	Field Characterization of Existing Conditions .....	8
2.3.1	Baseline Conditions.....	8
2.3.2	Vegetation Observations .....	8
2.3.3	Topography Observations.....	9
2.3.4	Hydrology and Drainage Conditions Observations.....	9
2.3.5	Soils Composition Observations .....	10
2.4	Wetland Delineation .....	10
2.4.1	Wetland Determination and Classification.....	10
2.5	Wetland Buffer Determination and Functional Assessment.....	10
2.5.1	Buffer Functional Assessment .....	11
<b>3</b>	<b>IMPACT ANALYSIS.....</b>	<b>12</b>
3.1	Proposed Impacts .....	13
3.2	Alternatives Analysis .....	14
<b>4</b>	<b>SUMMARY OF FINDINGS AND RECOMMENDATIONS.....</b>	<b>15</b>
4.1	Wetland and Buffer Assessment Summary .....	15
4.2	Summary of Findings.....	15
4.3	Recommendations .....	15
4.3.1	Recommended BMPs for Wetlands and Buffers .....	15
<b>5</b>	<b>CLOSURE.....</b>	<b>17</b>

## Tables

<b>Table 1.</b> Data Used for Desktop Analysis .....	3
<b>Table 2.</b> Vegetation Observed in the Study Area .....	9
<b>Table 3.</b> Wetland Classifications and Buffer Widths for site Wetlands. ....	10
<b>Table 4.</b> Proposed Impacts to Wetlands and Buffers. ....	13
<b>Table 5.</b> Assessment Summary for Study Area .....	15

## Attachments

References

Figures

Appendix A – Site Planning Documents

Appendix B – Wetland Determination Data Forms (USACE, Version 2.0)

## EXECUTIVE SUMMARY

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On behalf of Trans Mountain Corporation c/o Dan Heimbigner of Whatcom Environmental, Element Solutions wetlands scientists investigated the study area within the Swinomish Reservation located South of SR20 and west of the Swinomish Slough in Skagit County, Washington. This investigative work was conducted pursuant to the requirements of the Swinomish Indian Tribal Community permitting process. Trans Mountain Corporation is currently pursuing permits for the proposed pipeline capping. One wetland, Wetland A, was found in the study area. Wetland A is a Swinomish Tribe Class 2 wetland (Swinomish Tribal Code 19-04.410). Per Tribal Regulation regulations, Wetland A will require a 100-foot buffer.

Element Solutions visited the study area on December 4, 2018 to evaluate potential wetland features and inform site development. The wetland assessment was conducted according to the methods defined in the U.S. Army Corps of Engineers Regional Supplement to the Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (WMVCS; USACE 2010), and Ecology's Washington State Wetland Identification and Delineation Manual (Ecology 1997).

By adhering to Tribal Code minimization strategies, employing appropriate BMPs and stormwater treatment, placement of the "Armorflex concrete blocks mattress" cap is not expected to result in a net loss of wetland or buffer function.

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## QUALIFICATIONS OF AUTHORS

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**Adam Crispin**, Environmental Scientist and Aquatic Ecologist, has more than 7 years of experience conducting biological assessments and evaluation of wetlands and streams. Mr. Crispin has led regional water quality monitoring programs in northern California with the California Department of Fish and Wildlife. He also has a wide range of expertise, including salmonid habitat restoration, streamflow monitoring, benthic macroinvertebrate taxonomy, freshwater algae analysis, and water chemistry analysis. He has also led monitoring efforts for many aquatic species, including Pacific salmonids and ranid frogs. Adam has completed a 40-hour wetland delineation training from the Wetland Training Institute and holds certificates for wetland plant and hydric soil identification from Department of Ecology. He is a certified forage fish biologist and has been trained by the Washington Department of Fish and Wildlife. He is currently pursuing a Master's degree in Aquatic Ecology at Western Washington University.

**Jeff Ninnemann**, MS, PWS, LHG, is a wetland ecologist with over 18 years of experience in wetland delineation, stream assessment, and fish and wildlife assessment. Mr. Ninnemann is a certified Professional Wetland Scientist (PWS certification #1829) through the Society of Wetland Scientists Professional Certification Program and a licensed Hydrogeologist through the State of Washington (#2767). He completed the five-day training course for Wetland Delineations through the Wetland Training Institute, the two-day Department of Ecology training courses for Wetland Rating in both Eastern and Western Washington, Ecology 8-hour 2015 Wetland Rating Update Workshop, and Ecology's two-day Ordinary High Water Mark Determination training. In addition, Mr. Ninnemann has completed multiple continuing education courses in advanced hydric soil indicators, plant identification, and mitigation design, review, and implementation. His areas of expertise include wetland identification and delineation, wetland mitigation and restoration design, fish and wildlife assessments, permitting, project management, vegetation analysis, and native plant identification.

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# 1 INTRODUCTION

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## 1.1 Purpose

Element Solutions was retained by the client, Trans Mountain Corporation, to provide professional consulting services to identify the potential occurrence of regulated wetlands and to evaluate any potential impacts from the proposed project action to comply with environmental regulatory code. The proposed project action is a concrete gas pipeline cap, as described in detail in Section 1.3. The study area was identified as potentially containing regulated wetlands as classified under Swinomish Tribal Code (Title 19-04.400) and various federal and state regulations detailed in Section 1.4 below. Pursuant to the review and reporting requirements specified in this code, the objectives of the assessment were to evaluate and describe, to the extent feasible: 1) the existing site conditions, 2) the occurrence, functions, and processes of regulated areas, and 3) the potential impact from the proposed project action on regulated areas. Recommendations for avoiding, minimizing and/or mitigating potential impacts as relevant are provided in Section 4 in accordance with the assessment and reporting requirements specified in the regulatory code.

### 1.1.1 Organization of this report

In Section 1 we introduce and describe the study area, project action, and relevant regulatory code. The remainder of this report presents the following:

- Assessment of wetlands in Section 2
- Impact analysis in Section 3
- Summary of findings and recommendations are presented in Section 4
- Relevant supplementary documents included as Figures and Appendices

## 1.2 Location and Physiography

The subject parcels are located in the southeastern corner of Section 11, Township 34 North, and Range 2 East of the Willamette Meridian (lat-lon: 48.453187°, -122.517158°) in Skagit County, Washington, due south of State Route (SR) 20 and west the Swinomish Channel (Figure 1). The study area includes portions of three Skagit County parcels: P20269, P20263, and P20269 owned by the Swinomish Tribe. Swinomish Channel is associated with estuarine wetlands and deepwater habitats, both of which are proximate to the study area. Elevations across the study area range from approximately 5 feet at the thalweg of a ditch at the eastern extent of the study area to 12 feet at the crest of the berms that surround the study areas eastern and southern boundaries.

For the purposes of this assessment, the study area indicates the entire area that was assessed during the field and desktop evaluations (Figures 1 and 2), and includes the aforementioned subject parcels. The subject parcels are “in trust” according to the Skagit County assessor’s property search.



### 1.3 Proposed Project Action

Site planning documents and details about proposed actions have been developed by the client and are included below (Appendix A). The general plan is to cap an exposed section of gas pipeline using a “Armorflex concrete blocks mattress method” that would be minimally intrusive and provide reliable protection. The proposed project would occur in a stormwater ditch and, based on the preliminary plans (Appendix A), an area approximately 640 square feet would need to be excavated for the cap placement. Heavy equipment would be needed for cap placement and/or excavation and filling. The ditch elevation at its thalweg would increase by an approximate maximum of 6 inches.

### 1.4 Applicable Environmental Code

This assessment provides information that addresses the following code requirements.

#### 1.4.1 Swinomish Tribal Code

Under Swinomish Tribal Code, wetlands and other sensitive areas are regulated under Chapter 4, Shorelines and Sensitive Areas in Title 19, Environmental Protection. Specifically, Subchapter V – Wetland Sensitive Areas was referenced throughout this report.

#### 1.4.2 Federal Regulations

The following federal regulations and standards may also apply to this assessment:

- Section 404 of the Federal Water Pollution Control Act (Clean Water Act, P.L. 92-500, as amended);
- Section 401 of the Clean Water Act;
- Section 10 of the Rivers and Harbors Act of 1899;
- Coastal Zone Management Act;
- Endangered Species Act of 1973;
- National Historic Preservation Act;
- Magnuson-Stevens Act;
- Migratory Bird Treaty Act;
- Fish and Wildlife Coordination Act of 1934 (revised 1995).

#### 1.4.3 State Regulations

Although, at this time, this project does not appear to be under the jurisdiction of the State of Washington, the following Washington state regulations and standards were used as guidance to establish recommendations for responsible development (see Sections 3 and 4 below):

- State Growth Management Act (GMA);
- Shoreline Management Act (SMA) (RCW 36.70A.175; RCW 90.58.380).

The State of Washington, through Ecology, can delegate its authority to other agencies, but it retains its right to regulate critical areas under RCW 90.48.030.

## 1.5 Desktop Characterization of Existing Conditions

The following assessment integrates the best available science to characterize the existing conditions within the study area utilizing spatial data. We compiled previously-collected public data and interpreted its relevance using professional judgment and experience.

### 1.5.1 Spatial Data

The desktop assessment includes a review of available spatial data as inventoried below in Table 1. This data was evaluated by professionals using scientific methods based upon industry best practices.

**Table 1.** Data Used for Desktop Analysis

Data	Format	Date	Source
Aerial photography (NAIP Orthophoto)	SID	2011/2013	USDA
LiDAR	Bare earth grid	2006	PSLC
Topographic Contour Map	Shapefile	2016	Generated from LiDAR
Floodplain Elevation	Web map	2007	FEMA FIRM
Wetlands of High Conservation Value	Web map	2017	DNR
National Wetlands Inventory	Web map	Current	USFWS
ECOS IPaC ESA-listed Species	Accessed online	Current	USFWS
Priority Habitat and Species	Shapefile	Current	WDFW
Salmon distribution (SalmonScape)	Web map	Current	WDFW
Stream type	Web map	Current	DNR FPARS
Water Quality/303(d) list	Web map	2016	Ecology
Web Soil Survey	Accessed online	Current	USDA/NRCS
Hydric Soils List for Whatcom County	Accessed online	2017	USDA/NRCS
Amphibian Distribution	Web map	Current	WCAMP

Table Notes: DNR = Washington Department of Natural Resources, ECOS = Environmental Conservation Online System, Ecology = Washington Department of Ecology, FEMA = Federal Emergency Management Agency, FIRM = Flood Insurance Rate Map, FPARS = Forest Practices Application Review System, IPaC = Information for Planning and Consultation, NAIP = National Agriculture Imagery Program, PSLC = Puget Sound LiDAR Consortium, USDA = U.S. Department of Agriculture, USFWS = U.S. Fish and Wildlife Service, WCAMP = Whatcom County Amphibian Monitoring Program, WDFW = Washington Department of Fish and Wildlife

### 1.5.2 Previous Studies and Information

No previous studies pertaining to the study area or immediate vicinity were consulted as part of this evaluation.

### 1.5.3 Summary of Findings

Information obtained during the document and data review support the following interpretations:

#### ***Federal Emergency Management Agency***

According to the FEMA FIRM maps of the site vicinity, FEMA has not completed a flood hazard study on the Swinomish Reservation south of SR20; therefore flood maps of the study area have not been published. However, areas surrounding the Swinomish Channel have been designated in the Zones V4 and A1, both of which are Special Flood Hazard Areas (SFHAs) of “minimal flood hazard”. According to FEMA, these areas “will be inundated by the flood event having a 1-percent chance of being equaled or exceeded in any given year. The 1-percent annual chance flood is also referred to as the base flood or 100-year flood” (FEMA 2004).

#### ***Washington Department of Natural Resources Natural Heritage Program***

The Washington Department of Natural Resources (DNR) Natural Heritage Program (NHP) online mapper indicates a Wetlands of High Conservation Value approximate 1.5 miles west of the study area (DNR 2018a). The wetlands occur in Similk Bay and are documented as a Temperate Pacific Low Salt Marsh associated with slender pickleweed (*Salicornia virginica*). The species has a NatureServe Global Conservation Status Rank (2018) of G3 to G4 defined as, “Apparently Secure” (uncommon but not rare; some cause for long-term concern due to declines or other factors) to “Vulnerable” (at moderate risk of extinction due to a restricted range, relatively few populations [often 80 or fewer], recent and widespread declines, or other factors).

#### ***National Wetlands Inventory***

The U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) online map indicates that numerous wetlands exist adjacent to the study area, most associated with the Swinomish Channel and its historic floodplain. There are several large palustrine emergent, scrub-shrub, and forested wetlands in the vicinity of the study area many of which occurring on lands that are being actively farmed. NWI-mapped wetlands are shown in Figure 3. The onsite delineated palustrine wetland does not appear to have been mapped by USFWS.

#### ***Washington Department of Fish and Wildlife Priority Habitats and Species***

The publicly-available Washington Department of Fish and Wildlife (WDFW) Priority Habitat and Species (PHS) maps indicate that the Swinomish Channel and its tributaries are contiguous with deep-water aquatic and estuarine wetland habitats. Moreover, Pacific salmonids such as Chinook Salmon (*Oncorhynchus tshawytscha*), Coho Salmon (*O. kisutch*), Chum Salmon (*O. keta*), Pink Salmon (*O. gorbuscha*), Steelhead (*O. mykiss*), and Resident Coastal Cutthroat Trout (*O. clarki*); and forage fishes such as Pacific Sand Lance (*Ammodytes hexapterus*) and Surf Smelt (*Hypomesus pretiosus*) utilize Swinomish Channel as a migratory corridor. PHS maps also show various marine and avian wildlife species in association with Padilla Bay (WDFW 2018a). See also *Amphibian Data* section below.

#### ***Washington Department of Fish and Wildlife SalmonScape***

The WDFW SalmonScape web mapper indicates that the salmonids listed above are present in the Fidalgo Island and Padilla Bay basins (two watersheds that exist on either side of the basin); although the presence of some of these species is “presumed” (WDFW 2018b).

### **Forest Practices Application Review System**

DNR Forest Practices Application Review System (FPARS) online mapping tool indicates that Type F (fish bearing) and Type N (non-fish-bearing) streams are documented south and west of the study area (DNR 2018b). Many of these nearby streams have not been mapped by WDFW as fish bearing streams; however, given the abundance of documentation of salmonid species in the Swinomish Channel by other agencies, we assume this is merely a data gap. In addition to the nearby streams, there are several Type F and Type N (non-fish bearing) tributaries to the Swinomish Channel east of the study area in the larger Fidalgo Bay sub-basin (Figure 3).

### **303(d) List**

According to the Washington Department of Ecology (Ecology) online Water Quality Atlas, the Swinomish channel on the 303(d) list for Benzo(a)anthracene and Chrysene (Category 5 waters) approximately 1.6 miles south of the study area (Ecology 2016). Total Maximum Daily Load (TMDL) criteria (for bacteria) are being developed for the Frontal Padilla Bay sub-basin in which the study area is located.

### **Natural Resources Conservation Service Soils**

The U.S. Department of Agriculture (USDA) Web Soils Survey (WSS) online mapper shows Tacoma silt loam and Xerorthents soils within the study area (USDA 2018a). Both of these soil types are categorized as hydric according to the Natural Resources Conservation Service (NRCS) Hydric Soils List for Whatcom County (USDA 2018b). WSS results are shown in Figure 4.

### **Amphibian Data**

The Whatcom County Amphibian Monitoring Program (WCAMP) has no documented amphibian sightings in the vicinity of the study area (though the group is based in Whatcom County, they have monitored isolated Skagit County locations). However, WDFW data indicates that Western toad (*Anaxyrus boreas*) breeding sites, and multiple toad occurrences, have been documented less than 5 miles south and east of the study area. Western toad likely can be found in freshwater wetlands in the vicinity of the study area. Moreover, common amphibian species such as Northern red-legged frog (*Rana aurora*), Northwestern salamander (*Ambystoma gracile*), Ensatina (*Ensatina eschscholtzii*), Pacific chorus frog (*Pseudacris regilla*), long-toed salamander (*A. macrodactylum*), and American bullfrog (*Lithobates clamitans*) may exist throughout the project vicinity.

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## 2 WETLAND ASSESSMENT

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### 2.1 Guiding Regulations, Standards, and Methods for Assessment

The purpose of a wetland delineation is to provide an assessment of the presence, location, and extent of wetlands and/or other critical aquatic habitats. Such work falls under the jurisdiction of the USACE, Ecology, and the County. The intent of wetland designation with associated buffer zones are to ensure the protection of valuable wetland function as identified in the Clean Water Act.

Wetlands are an essential component of the earth's ecosystems. Wetlands have ecosystem value related to their role in improving water quality, cycling nutrients, reducing erosion, and providing habitat for a variety of aquatic and terrestrial organisms. Wetlands also provide critical nesting and feeding habitat for many wildlife species, and are a significant source of fresh water for state municipalities. The wetlands referred to in this report conform to the USACE's definition:

*"...those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (Environmental Laboratory, 1987).*

#### 2.1.1 Standard Methods

Methods used to perform the wetland delineation, including the review of existing information, an interview with the client about site characteristics and project objectives, and field investigation procedures are consistent with current federal and state agency requirements, as well as local jurisdiction requirements, for performing wetland delineations and identifying protective wetland buffers.

This wetland delineation was conducted according to the methods defined in the U.S. Army Corps of Engineers Wetland Delineation Manual (USACE 1987), and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (WMVCS; USACE 2010). Soil colors were classified by their numerical description, as identified on a Munsell Soil Color Chart (Munsell 2010), and hydric indicators were evaluated using the USDA Field Indicators of Hydric Soils in the United States (USDA 2010).

### 2.2 Changes in Conditions

Wetlands, habitat, and Ordinary High Watermark (OHWM) conditions are subject to change. Any number of variables, both natural and anthropogenic can influence these conditions, such as changes in hydrology, both seasonally and in response to weather (Pacific Decadal Oscillation), climate, and other land use changes. In the event that such changes significantly alter the site conditions explicitly described in this report the local regulatory agency should be consulted to determine if a reassessment of site conditions is necessary.

## 2.3 Field Characterization of Existing Conditions

The original field visit to the study area was conducted by a qualified Element environmental professional on December 4, 2018. During the field visit, one large wetland was observed (Wetland A) to be extending north of the study area (Figure 2). The following subsections describe conditions that were observed while in the field.

### 2.3.1 Baseline Conditions

Currently, development in the vicinity of study area consists of a SR20 and the Swinomish Channel Bridge to the north, gravel roads, ditches, levees, large gravel berms, and rock piles. The gravel road seems to predate 1998 as evident in historic photographs (Google). The road is the main access to the large agricultural fields west of the Swinomish Channel. The gravel piles south and west of Wetland A appeared sometime between 2002 and 2005 (Google). The study area is predominately composed of herbaceous plants (predominantly grasses) associated with Wetland A. The pipeline right-of-way in the study area appears to be regularly mowed and maintained.

#### ***Recent Weather Conditions***

During the site visit, the weather was cold, dry, and sunny, with evident freezing of ponded surface water. According to NOAA (2019) spatial precipitation data indicate that in the Anacortes area, the month of November was significantly drier than normal; between 50-75% of average values with approximately 2 to 3 inches less rainfall. The month of December had approximately average rainfall near Anacortes and in the Frontal Padilla Bay basin.

### 2.3.2 Vegetation Observations

Herbaceous plants are clearly dominant in Wetland A, with only a few isolated shrubs and no trees. There is, however, a small area southwest of Wetland A composed of mid-sized trees and saplings. Plant species observed on site are included in Table 2. Specific species found in wetland and upland areas can be found in the wetland data forms in Appendix C.



**Table 2. Vegetation Observed in the Study Area**

Scientific Name	Common Name	Wetland Indicator Status
<b>Trees</b>		
<i>Alnus rubra</i>	Red alder	FAC
<i>Salix lucida</i>	Pacific willow	FACW
<b>Shrubs</b>		
<i>Salix hookeriana</i>	Hooker's willow	FACW
<i>Spiraea douglasii</i>	Douglas' spirea	FACW
<i>Rubus armeniacus</i>	Himalyan blackberry	FAC
<b>Herbaceous Species</b>		
<i>Phalaris arundinacea</i>	Reed canarygrass	FACW
<i>Schedonorus arundinaceus</i>	Tall fescue	FAC
<i>Trifolium repens</i>	White clover	FAC
<i>Equisetum arvense</i>	Field horsetail	FAC
<i>Ranunculus repens</i>	Creeping buttercup	FAC
<i>Typha latifolia</i>	Common cattail	OBL

Notes:

<sup>1</sup> denotes Class C noxious weed as designated by the Washington State Noxious Weed Control Board (NWCW 2018)

FAC = facultative, FACU = facultative upland, FACW = facultative wetland, OBL = obligate

### 2.3.3 Topography Observations

Topography within the study area ranges from approximately 5 feet, at the thalweg of a ditch at the eastern extent of the study area, to 12 feet at the crest of the berms that surround the study areas eastern and southern boundaries. The study area is generally flat, with many depressional areas and relict ditches within and surrounding Wetland A. The channel banks of the Swinomish Channel and vicinity berms can be easily observed from LiDAR topographical images. See Figure 5 for a topographic map of the study area.

### 2.3.4 Hydrology and Drainage Conditions Observations

Surface water was observed in the onsite ditch and the depressional areas (associated with relict ditches) within areas in Wetland A. Wetland A appears to be at least partially hydrologically connected to the north-south ditch to its east via surface and groundwater flow. We surmise that surface waters from direct precipitation flow as stormwater, from high-points on the Swinomish Channel berms, and other road berms, downslope into Wetland A, the ditch, and ultimately into the Swinomish Channel. The easterly ditch is also hydrologically connected to offsite stream channels (and ditches) south and west of Wetland A. During the wet season, surface waters in the ditch likely flow north and south of the study area, continuing off parcel (Figure 5).

During the wetland delineation, *Surface Water* (A1), *High Water Table* (A2), *Saturation* (A3), and *Sparsely Vegetated Concave Surfaces* (B8), USACE indicators for wetland hydrology, were used to help determine the extent of the wetland edge.

### 2.3.5 Soils Composition Observations

On-site soils contained hydric indicators such as *Depleted Below Dark Surface* (A11) and *Redox Dark Surface* (F6). Descriptions of soil plot data within Wetland A and the adjacent uplands can be found in the field data forms in Appendix C.

## 2.4 Wetland Delineation

### 2.4.1 Wetland Determination and Classification

Wetland A was flagged with 21 pink “WETLAND DELINEATION” flags (marked A-1 through A-21) and mapped with a TopCon FC-5000 handheld GPS data collector with  $\pm 2$  to 3-meter accuracy, as shown in Figure 2. Soil test pits were also flagged (blue flagging) and mapped.

Wetland A is located within the Frontal Padilla Bay watershed and within its historic flood plain. In the study area, the wetlands are located in a natural depression that may have been augmented by previous landowners or neighbors. The wetlands contain hydrologic indicators of *Sparsely Vegetated Concave Surface* and *Saturation* and was seasonally inundated or saturated throughout.

Many data plots were assessed during the delineation of each wetland, two of which (SP-A1 and SP-UP1) were recorded. Data obtained at these data plots can be found in Appendix C. The Site wetland was determined to be depressional with herbaceous emergent vegetation. The wetland did not contain standing snags or large downed woody debris, and was largely free of invasive species.

## 2.5 Wetland Buffer Determination and Functional Assessment

Wetland A is a Swinomish Tribe Class 2 wetland (Swinomish Tribal Code 19-04.410), as confirmed by Scott Andrews, Assistant Director of the Swinomish Department of Environmental Protection, in a phone conversation on January 9, 2019. Per Tribal Regulation regulations, Wetland A will require a 100-foot buffer.

Wetland A was also identified as having the Cowardin Classification of palustrine-emergent with seasonal flooding (PEME; Cowardin 1979). The wetland is also an Ecology depressional wetland according to the Ecology Wetland Rating System (2014). The wetland that is approximately 6.80 acres. Buffer widths are shown in Table 3 and Figures 2.

**Table 3.** Wetland Classifications and Buffer Widths for site Wetlands.

Wetlands	Swinomish Tribe Wetland Class	Swinomish Tribe Buffer Width (ft)	Cowardin Classification	Ecology Classification	Size (acres)
Wetland A	Class 2	100	PEME	Depressional	6.80

### 2.5.1 Buffer Functional Assessment

The functions provided by the on-site buffers that protect the regulated wetlands are:

- Water quality to protect the wetland functions;
- Habitat for associated Priority Habitats and Species function.

Based on general criteria described in the Western Washington Wetland Rating Form (Ecology, 2014), wetland buffer areas appear to provide relatively low habitat value, as the area is impacted by roads berms and mowing. Water quality functions for the study area, however appear to be at least moderate. Persistent forested vegetation would likely improve water quality as runoff from nearby impacted areas flows into the buffer areas. Water quality condition in the nearby Swinomish channel (Figure 3) may also be improved by the water quality functions of Wetland A and its buffer.

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### 3 IMPACT ANALYSIS

#### 3.1 Proposed Impacts

Site planning documents and details about proposed actions have been developed by the client and are included below (Appendix A). The general plan is to cap an exposed section of gas pipeline using a “Armorflex concrete blocks mattress method” that would be “minimally intrusive and provide reliable protection”. The proposed project would occur in a stormwater ditch; however, based on the preliminary plans (Appendix A) an area approximately 640 square feet would need to be excavated for the cap placement. Approximately 425 square feet of excavation would temporarily create wetland impacts, which would be immediately backfilled. Heavy equipment would also need to access the exposed pipeline via the routinely-mowed right-of-way and cross the existing wetland during the summer dry season (Figure 2). Impacts due to heavy equipment tracks are not anticipated but would need to be mitigated for if they occur (see Section 4.3). The equipment would be used specifically for cap placement and/or excavation and filling. Although, the project would include a minimal amount of excavation and filling and would use standard BMPs for construction activities in and near wetlands (Section 4.3). The ditch elevation at its thalweg would increase by an approximate maximum of 6 inches.

The placement of the proposed cap would slightly increase impervious surfaces in the study area; however these permanent impacts would likely be *de minimis* because they would occur within a permanently inundated ditch, and the surface of the cap would likely be submerged most of the year. Annual runoff into the adjacent Wetland A is not expected to increase and an appropriate stormwater plan and BMPs would minimize or eliminate these impacts. Impacts would largely be temporary in nature and are summarized in Table 7 and shown in Figure 2.

**Table 4.** Proposed Impacts to Wetlands and Buffers.

Area Being Impacted	Proposed Impact Type	
	Permanent Impacts (sq. ft)	Temporary Impacts (sq. ft)
Wetland A	32	425
Wetland A Buffer	16	215
<b>Proposed Total Impacts</b>	<b>48</b>	<b>640</b>
<b>Recommended Impact Designation</b>	<b>No net loss of wetland or buffer functions<sup>1</sup></b>	

Notes: sq. ft = square feet

<sup>1</sup>Using guidance from the Washington Administrative Code, WAC 365-196-830(8)(a), “No net loss” means the maintenance of the aggregate total of functions and values as achieved through a case-by-case review of development proposals. Each project shall be evaluated based on its ability to meet the no net loss goal.

## 3.2 Alternatives Analysis

In order to determine if the proposed development is the least environmentally impactful design, an alternatives analysis was conducted to find other feasible alternatives. The basis for comparison included project cost, logistics, environmental impacts, and ability to meet the project purpose and need. Because the project is of small scale and of simple design we evaluated only three potential alternatives, below.

### **Alternative 0 (no action)**

Alternative 0 is defined by not completing the proposed cap, foregoing site development. This alternative would cost nothing and would result in no additional environmental impacts; however, not constructing the pipeline cap does not meet the project purpose and need. The proposed capping is being proposed primarily for safety reasons and leaving the pipeline partially exposed is potentially an unsafe alternative.

### **Alternative 1 (using a different method of pipeline capping)**

Alternative 1, using a different method of pipeline capping, appears infeasible to complete the project purpose and need. A number of alternative pipeline capping methods exist; however these methods would likely result in a larger pipeline cap or burying the exposed pipeline, impacting a larger area and potentially changing the nature of surface water hydrology in the onsite ditch, potentially exacerbating flooding

### **Alternative 2 (proposed development activity)**

Alternative 2 is the project that is currently being proposed. This alternative is the least environmentally impactful while meeting the project purpose and need. The wetland and buffer impacts from the proposed project are limited and temporary impacted areas would be immediately backfilled. With the exception the partially exposed permanent cap structure, all impacted areas (including staging areas for equipment and building materials) would be returned to existing conditions, or would be reduced to the minimum dimensions feasible. A stormwater plan that meets state and federal guidelines would be developed and would avoid increasing hydrologic inputs into wetlands and buffers.

## 4 SUMMARY OF FINDINGS AND RECOMMENDATIONS

### 4.1 Wetland and Buffer Assessment Summary

Table 5 summarizes the results of the assessment and presents the regulated wetland areas identified on site and their associated buffers.

**Table 5.** Assessment Summary for Study Area

Regulated Area	Wetland Size/ Buffer Width	Swinomish Tribe Wetland Class	Proposed Impacts	
			Permanent Impacts (sq. ft)	Temporary Impacts (sq. ft)
Wetland A	6.80 acres	Class 2	32	425
Wetland A Buffer	100 feet	-	16	215
Total Impacts			48	640

### 4.2 Summary of Findings

The proposed pipeline capping project would impact Wetland A and its 100-foot buffer within the study area; however, these impacts are small and predominantly temporary in nature. The permanent impacts to the wetland and would be at the bottom of an existing ditch and not significantly change site hydrology. Moreover, the project would address safety concerns due to the exposed gas pipeline. By adhering to Tribal Code minimization strategies, employing appropriate BMPs and stormwater treatment, placement of the “Armorflex concrete blocks mattress” cap is not expected to result in a net loss of wetland or buffer function.

### 4.3 Recommendations

#### 4.3.1 Recommended BMPs for Wetlands and Buffers

The following BMPs are recommended based on professional experience and Washington State Department of Transportation (WSDOT) BMPs for Endangered Species Act (ESA) Habitat Protection (WSDOT 2004). Although no ESA-listed species or critical habitat is present in the area, the following BMPs would help to minimize impacts to and aquatic habitat within wetlands and streams:

- Work should occur during the summer dry season to avoid track rutting from heavy equipment.
- Any impacts, such as rutting or excavation, should be immediately backfilled and returned to pre-existing conditions. Where feasible, native seeds should be broadcast in areas where impacts have resulted in bare soils.
- During the summer (July through September), no soils should remain exposed and unworked for more than seven days.



- During the winter (October through June), no soils should remain exposed and unworked for more than two days.
- The job site should be marked, the work area should be flagged, and equipment should be operated in a way that minimizes disturbance to riparian habitat.
- Appropriate erosion control measures, including but not limited to coir logs, filter fabric, silt fences, and straw bales, should be utilized during construction to reduce turbidity, sediment, and/or pollutants from entering waterbodies.
- All construction equipment should be regularly inspected and cleaned to prevent the transfer of pollutants to waterbodies.
- The construction contractor should be required to have a spill kit on site at all times.
- All construction debris or waste should be removed from site and no stockpiled within 35 feet of the top of the slope on site
- All wastewater should be directed away from waterbodies and conform to Ecology Stormwater Standards.

No net loss of buffer function and value is expected if appropriate BMPs are utilized.

## 5 CLOSURE

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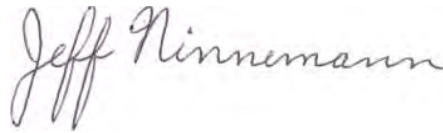
Wetland identification is an inexact science, and trained individuals often have differing professional opinions. Final determinations for wetland boundaries and typing concurrence or adjustments to these are the responsibility of the regulating resource agency. Wetlands are, by definition, transitional areas; their boundaries can be altered by changes in hydrology or land use. In addition, the definition of jurisdictional wetlands may change. If a physical change occurs in the basin, or if 5 years pass before the proposed project is undertaken, another wetland survey should be conducted. The results and conclusions expressed herein represent Element's professional judgment on the information available. Element cannot guarantee that the U.S. Army Corps of Engineers or the local jurisdiction determination will correspond with the determinations contained in this document.

This report was prepared and submitted by:



---

Adam Crispin  
Biologist, Aquatic Ecologist



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Jeff Ninnemann, PWS, LHG  
Senior Wetland Ecologist, Hydrogeologist

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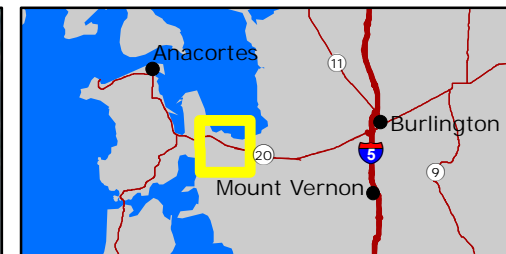
## Figures

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- 1) Site Vicinity
- 2) Field Investigation Results
- 3) Vicinity Hydrology
- 4) NRCS Soil Units
- 5) Topography

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Data Credits:  
USDA NAIP 2017  
WSDOT 2018

- Project Location
- Study Area
- Highways
- Roads

0 1,000 2,000 4,000 Feet

1:24,000

1 inch = 2,000 feet

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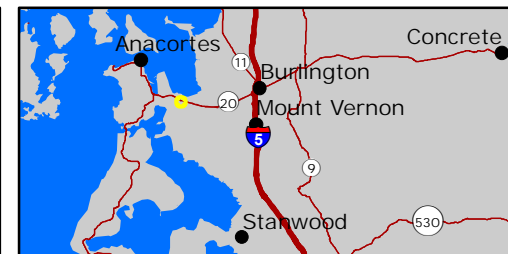
## Figure 1

Wetland Map

Date: 5/1/2019







Data Credits:  
USDA NAIP 2017

- Highways
- Roads
- Study Area
- Pipeline ROW
- Soil Pits
- Wetlands
- Approximate Wetland Edge (not confirmed)
- 100-foot Swinomish Tribe Class 2 Wetland Buffer

#### Impact Type (Proposed Pipeline Cap)

- Permanent (48 sq. ft)
- Temporary (640 sq. ft)

0 105 210 420 Feet

1:2,260

1 inch = 188 feet

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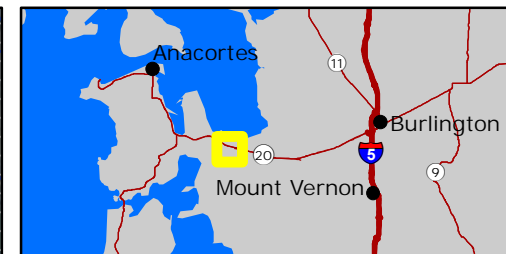
## Figure 2

Field Investigation Results and  
Proposed Impacts

Date: 5/3/2019







Data Credits:  
 USDA NAIP 2017, WSDOT 2018  
 Skagit County 2018, DNR 2005  
 WDFW 2012, USFWS NWI 2016

- Project Location
- Study Area
- Highways
- Roads
- National Wetland Inventory
- DNR Mapped Streams**
- Fishbearing
- Non-Fishbearing
- Shoreline
- Untyped
- Various Water Features

0 500 1,000 2,000 Feet

1: 12,000  
 1 inch = 1,000 feet

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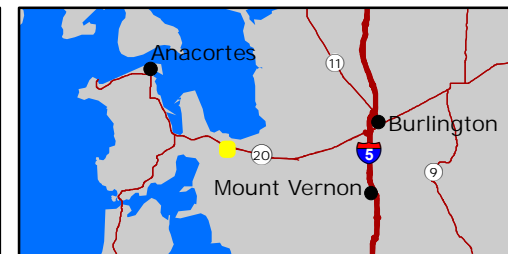
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**Figure 3**  
 Vicinity Hydrology

Date: 5/3/2019







Data Credits:  
 USDA NAIP 2017  
 WSDOT 2018  
 Skagit County 2018  
 NRCS 2013

- Project Location
- Study Area
- Approximate Wetland Edge (not confirmed)
- Wetlands
- NRCS Soil Units
- Highways
- Roads

0 125 250 500 Feet

1:2,937

1 inch = 245 feet

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NRCS Soil Units:  
 141 - Tacoma silt loam  
 142 - Tacoma silt loam, drained  
 165 - Xerorthents, 0%-5% slopes

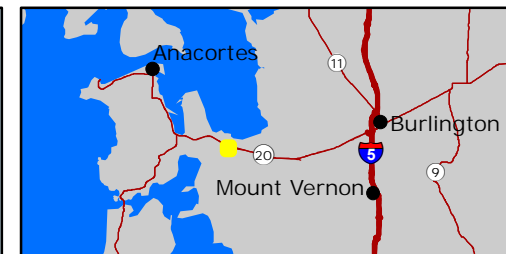
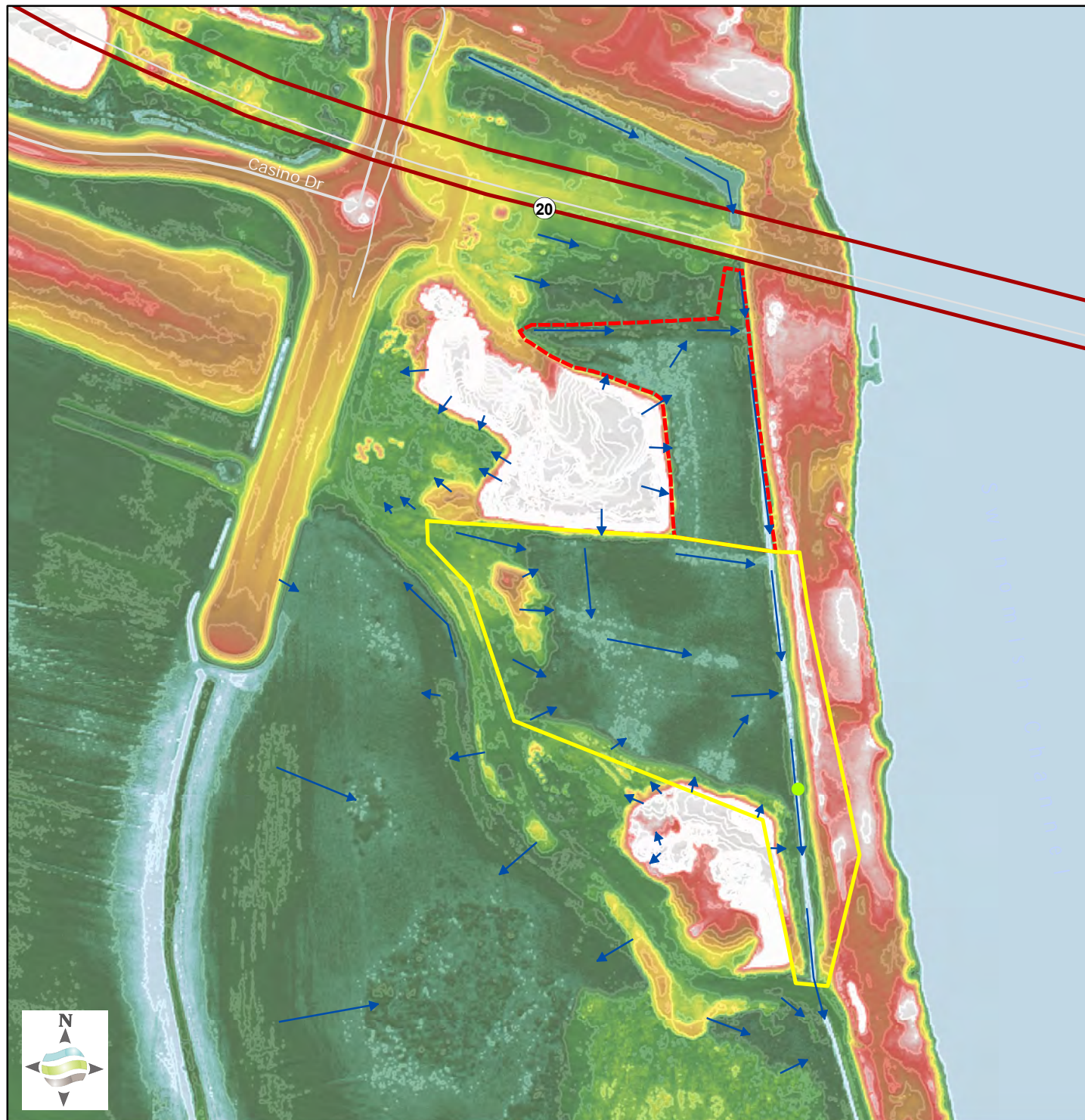
## Figure 4

NRCS Soil Units

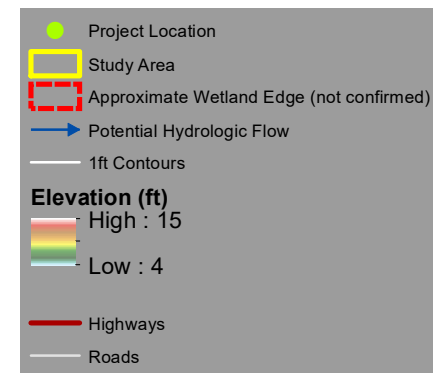
Date: 5/1/2019







Data Credits:  
 USDA NAIP 2017  
 WSDOT 2018  
 Skagit County 2018  
 USGS, QSI 2017



0 125 250 500 Feet

1:3,224

1 inch = 269 feet

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**Figure 5**

Topography

Date: 5/1/2019



## Appendix A – Site Planning Documents

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# INDICATOR ENGINEERING

FEBRUARY 7, 2019

## LETTER BRIEF

**TO:**

Dan Chow & Richard Chan, Trans Mountain Pipeline (Puget Sound)

**CC:** Dan Heimbigner, Whatcom Environmental Services

**Via:** Email

**FROM:**

Pat Flanagan, PE

**PROJECT:** 10034

**RE: Trans Mountain Pipeline (Puget Sound) Burlington Anacortes – Swinomish Ditch Crossing**

---

This letter is to provide you the JARPA design package for the risk remediation of the Trans Mountain Pipeline (TMP) Puget Sound Burlington Anacortes MB 16" crossing of the Swinomish drainage ditch, located west of the Swinomish Slough at approximately MP 6.02. The design utilizes an ArmorFlex concrete block mattress to provide cover and protection for the exposed section.

As discussed the current design assumes that a small compacted gravel foundation would be built to provide support and stability for the ArmorFlex concrete blocks mattress. No geotechnical analysis has been completed, however we recommend a geotechnical engineer be on-site during construction to oversee the foundation compaction.

Design quantities and cost estimate are being revised and will be provided in the next few days.

We look forward to continuing the design of the Swinomish ditch crossing remediation. If you have any questions, comments or would like to discuss next steps, please contact Pat Flanagan via email or at (206) 651-5103.

Respectfully Submitted,

Indicator Engineering PLLC

**Prepared by:**



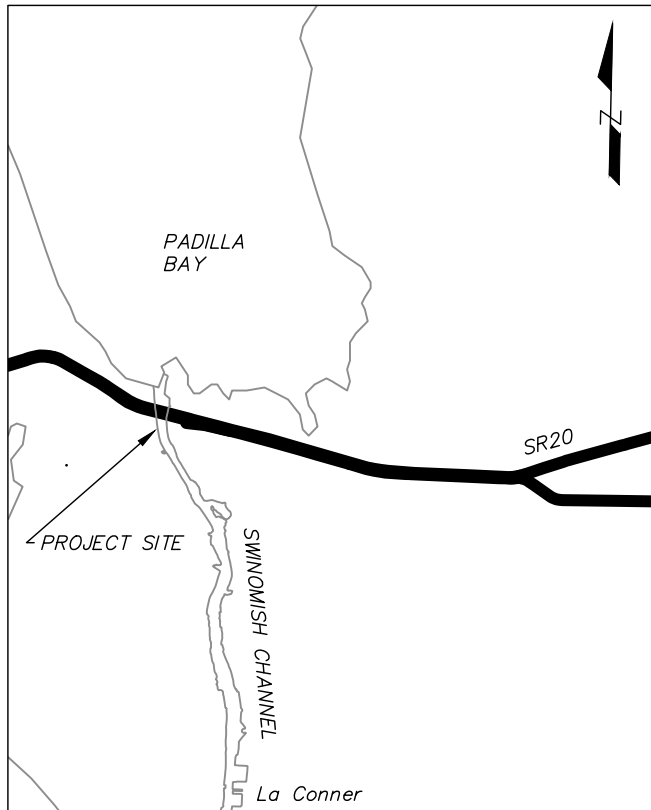
Patrick Flanagan, PE

**ENCLOSED: Plans (8 pages) – JARPA format 8.5"x11" 60% level plans for the TMP Swinomish Ditch Crossing Remediation**

# Trans Mountain Pipeline (Puget Sound) Swinomish Ditch Crossing Remediation



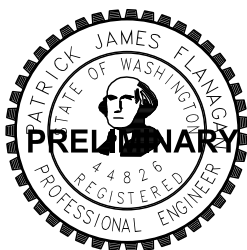
WA STATE MAP



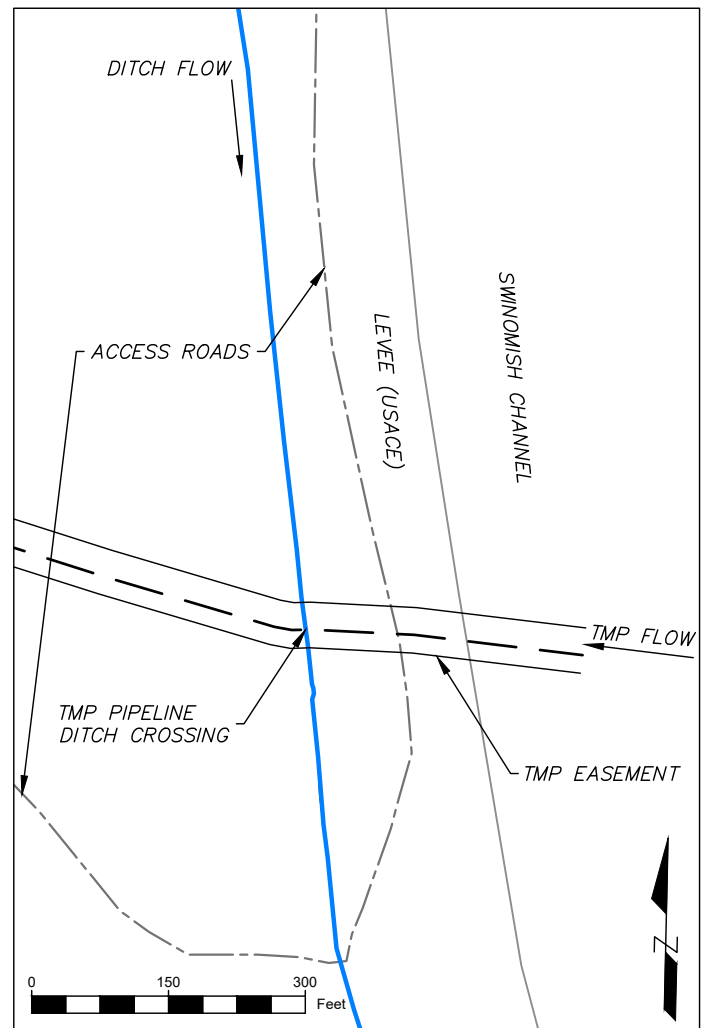
VICINITY MAP

## ABBREVIATION LIST

'-FEET  
"-INCHES  
TMP-TRANS MOUNTAIN PIPELINE  
TYP-TYPICAL  
WS-WATER SURFACE



VERTICAL: LOCAL ASSUMED  
HORIZONTAL: LOCAL ASSUMED



PROJECT OVERVIEW

INDICATOR PROJECT #: 10034

REFERENCE:  
APPLICANT:  
*Trans Mountain Pipeline (Puget Sound)*

LOCATION:  
*1000' South of SR20 and 180'  
West of Swinomish Slough*

PROPOSED PROJECT:  
*Swinomish Ditch Crossing  
Remediation*

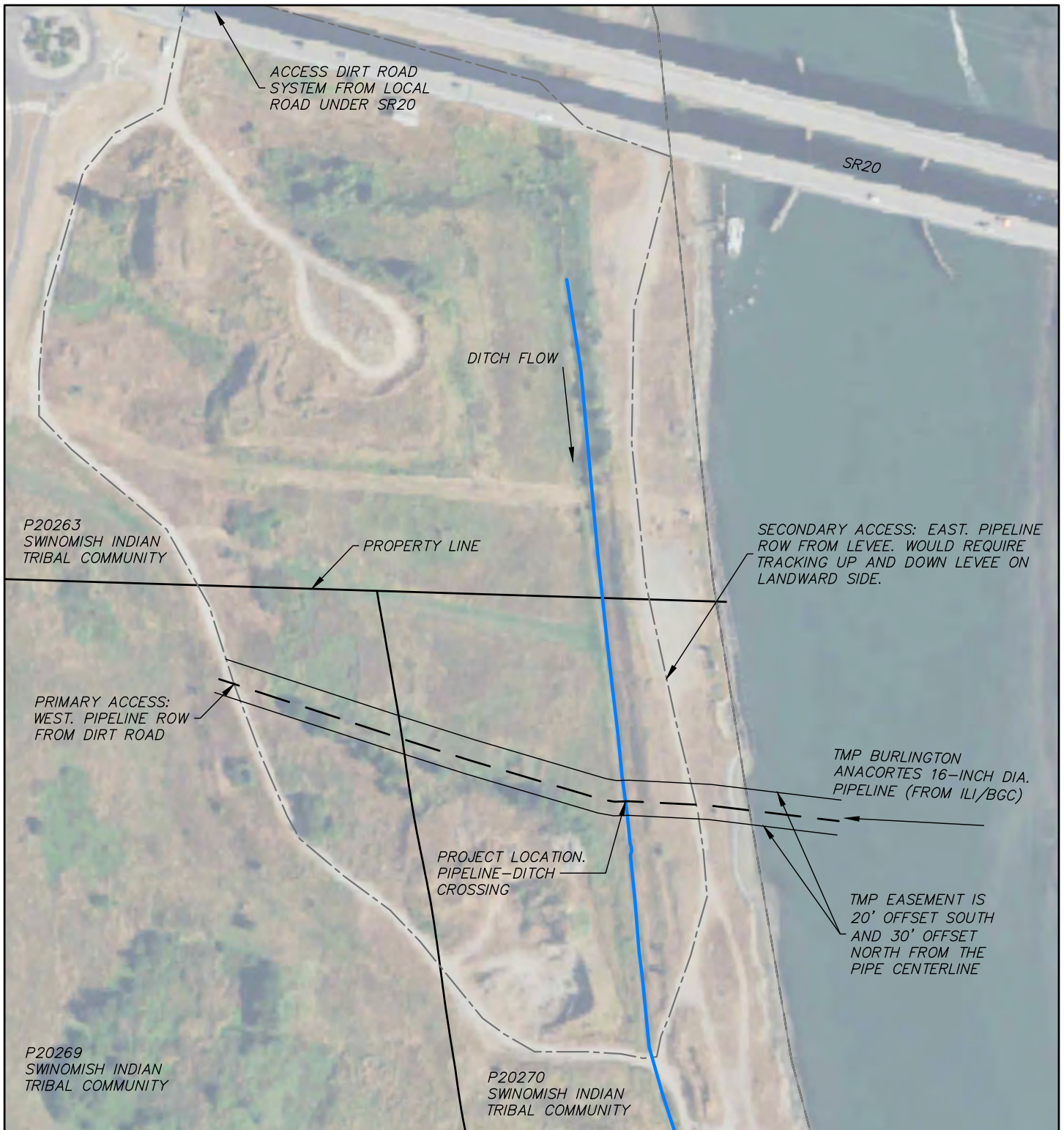
ADJACENT PROPERTY OWNERS:  
*SWINOMISH INDIAN  
TRIBAL COMMUNITY (US  
GOVT. HOLDING)*

LAT/LONG: 48.452, -122.516

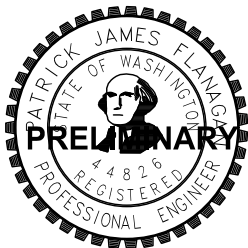
IN: *Swinomish Drainage Ditch*  
NEAR/AT: *Anacortes/La Conner*  
COUNTY: *Skagit*  
STATE: *WA*

SHEET: *01 of 08* DATE: *02/07/19*

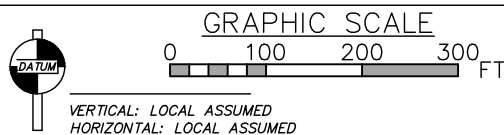




## Access Plan



### TMP PORT DITCH CULVERT REPLACEMENT PLANNING 60% SUBMITTAL



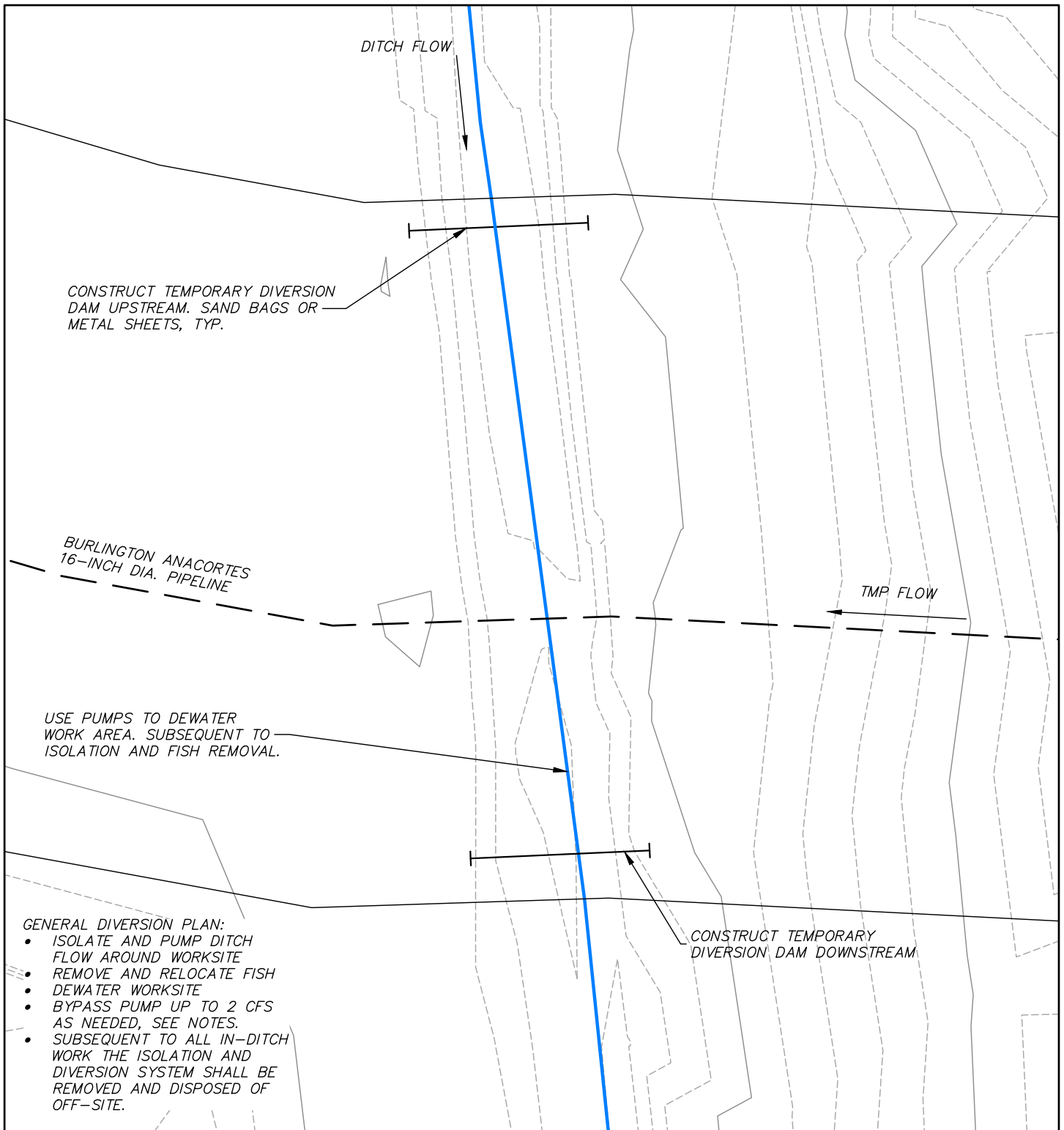
INDICATOR ENG. PROJECT #: 10034

#### REFERENCE:

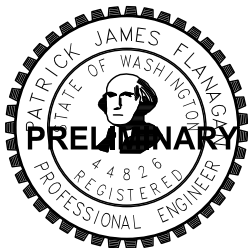
APPLICANT: *Trans Mountain Pipeline*  
PROPOSED PROJECT:  
*Swinomish Ditch Crossing Remediation*

COUNTY: *Skagit County, WA*  
LOCATION: *1000' South of SR20 and  
180' West of Swinomish Slough*

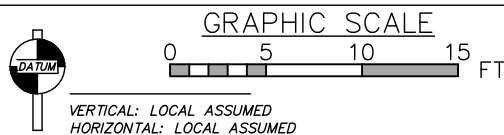
SHEET: *02 of 08*      DATE: *02/07/19*



## Isolation and Diversion Plan



### TMP PORT DITCH CULVERT REPLACEMENT PLANNING 60% SUBMITTAL



INDICATOR ENG. PROJECT #: 10034

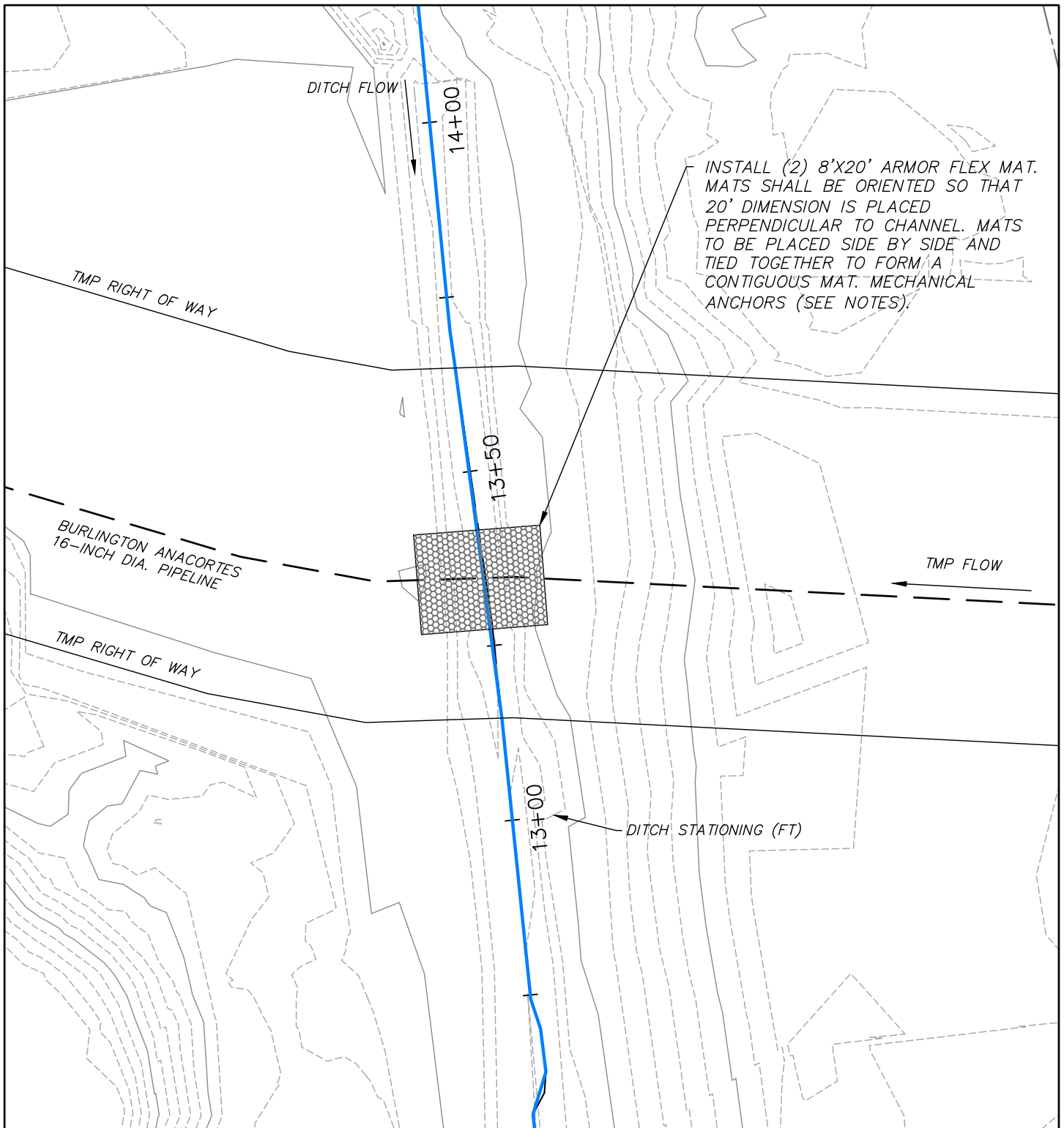
#### REFERENCE:

APPLICANT: *Trans Mountain Pipeline*  
PROPOSED PROJECT:  
*Swinomish Ditch Crossing Remediation*

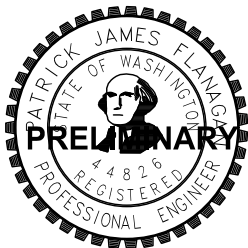
COUNTY: *Skagit County, WA*  
LOCATION: *1000' South of SR20 and  
180' West of Swinomish Slough*

SHEET: *03 of 08* DATE: *02/07/19*

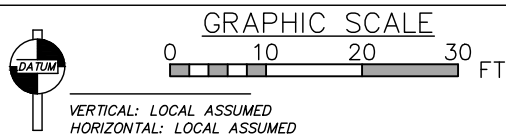




Countermeasures: Plan View



# **TMP PORT DITCH CULVERT REPLACEMENT PLANNING 60% SUBMITTAL**



INDICATOR ENG. PROJECT #: 10034

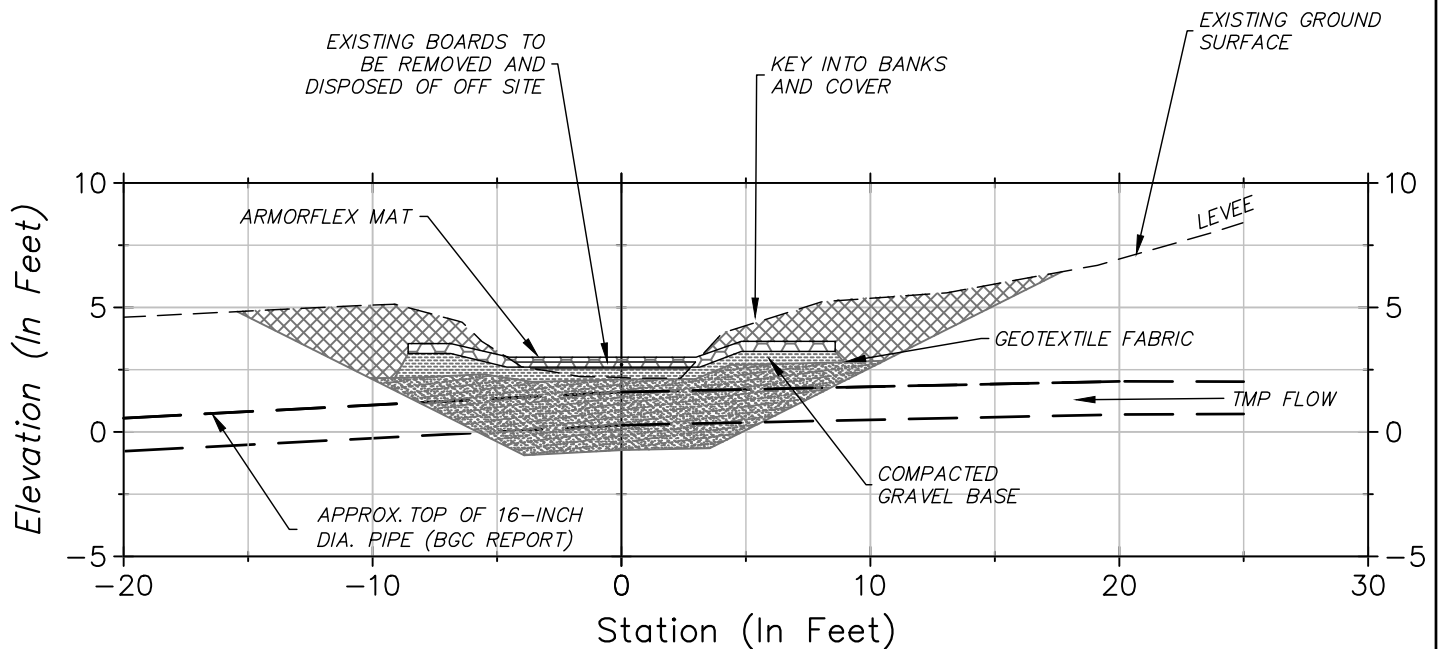
## **REFERENCE:**

APPLICANT: *Trans Mountain Pipeline*  
PROPOSED PROJECT:  
*Swinomish Ditch Crossing Remediation*

COUNTY: *Skagit County, WA*  
LOCATION: *1000' South of SR20 and  
180' West of Swinomish Slough*

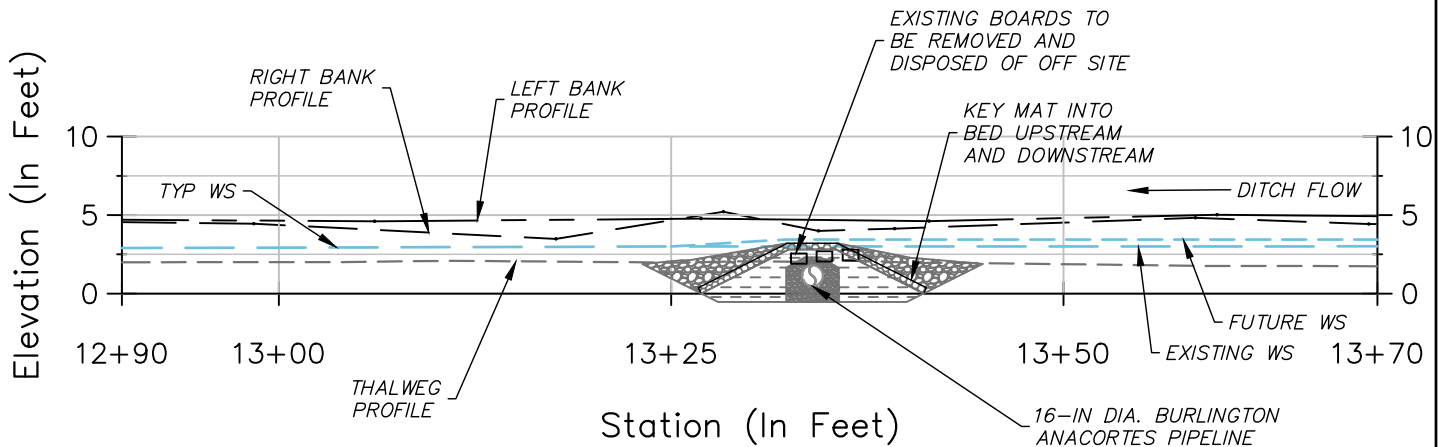
SHEET: *04 of 08*      DATE: *02/07/19*

# SECTION 1

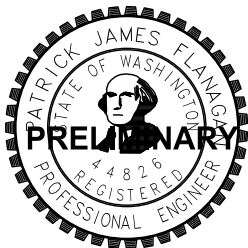


NOTE: PIPE LOCATED AT DITCH. PIPE PROFILE IS APPROX BASED ON PRIOR REMOTE SURVEY, SEE CONSTRUCTION NOTES.

# DITCH PROFILE



## Countermeasures: Sections



## TMP PORT DITCH CULVERT REPLACEMENT PLANNING 60% SUBMITTAL



VERTICAL: LOCAL ASSUMED  
HORIZONTAL: LOCAL ASSUMED

INDICATOR ENG. PROJECT #: 10034

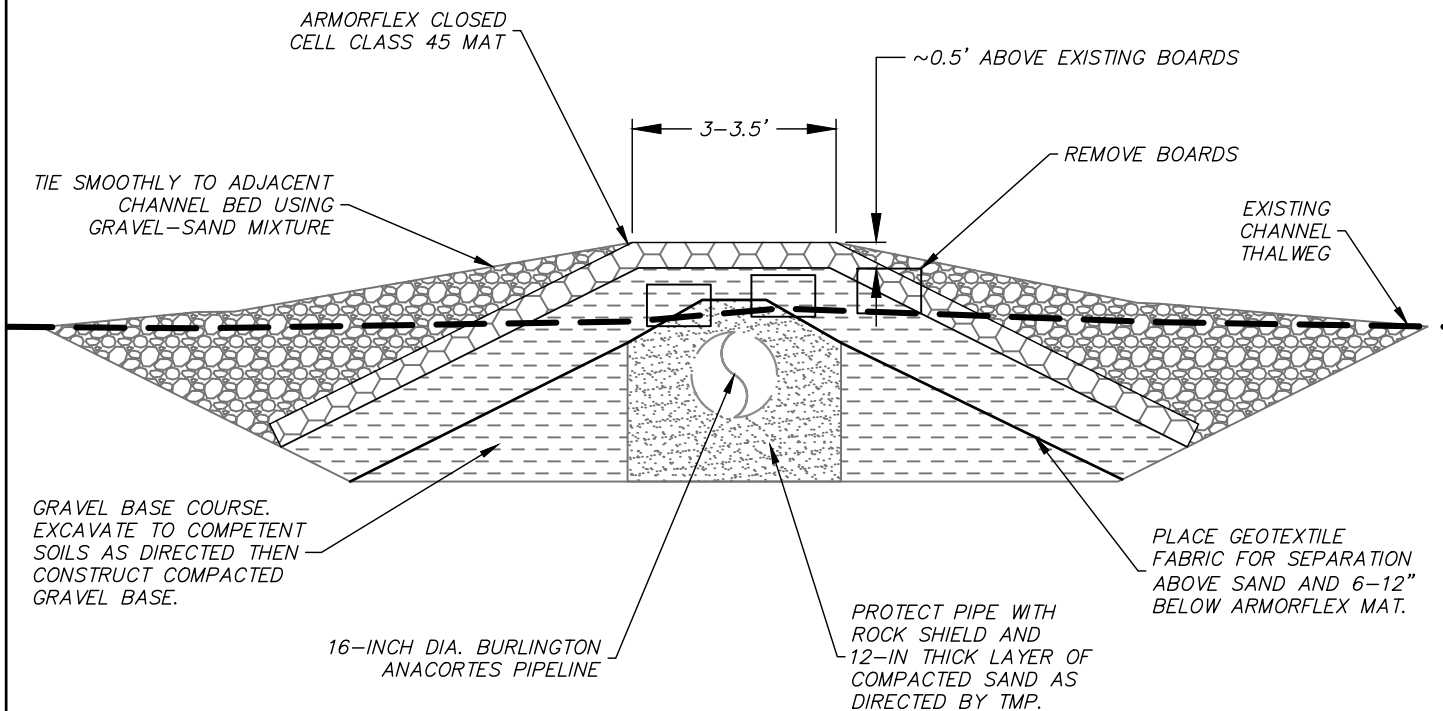
### REFERENCE:

APPLICANT: *Trans Mountain Pipeline*  
PROPOSED PROJECT:  
*Swinomish Ditch Crossing Remediation*

COUNTY: *Skagit County, WA*  
LOCATION: *1000' South of SR20 and  
180' West of Swinomish Slough*

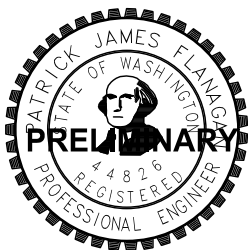
SHEET: *05 of 08* DATE: *02/07/19*

INSTALL ROCK SHIELD AND ARMOR FLEX MAT. ROCK SHIELD REQUIRED IS TUFF-N-NUFF OR EQUIVALENT. LENGTH OF ROCK SHIELD WILL BE DETERMINED IN FIELD BY TMP. SEE NOTES.



THIS VIEW NOT TO SCALE

## Countermeasures: Details



### TMP PORT DITCH CULVERT REPLACEMENT PLANNING 60% SUBMITTAL



VERTICAL: LOCAL ASSUMED  
HORIZONTAL: LOCAL ASSUMED

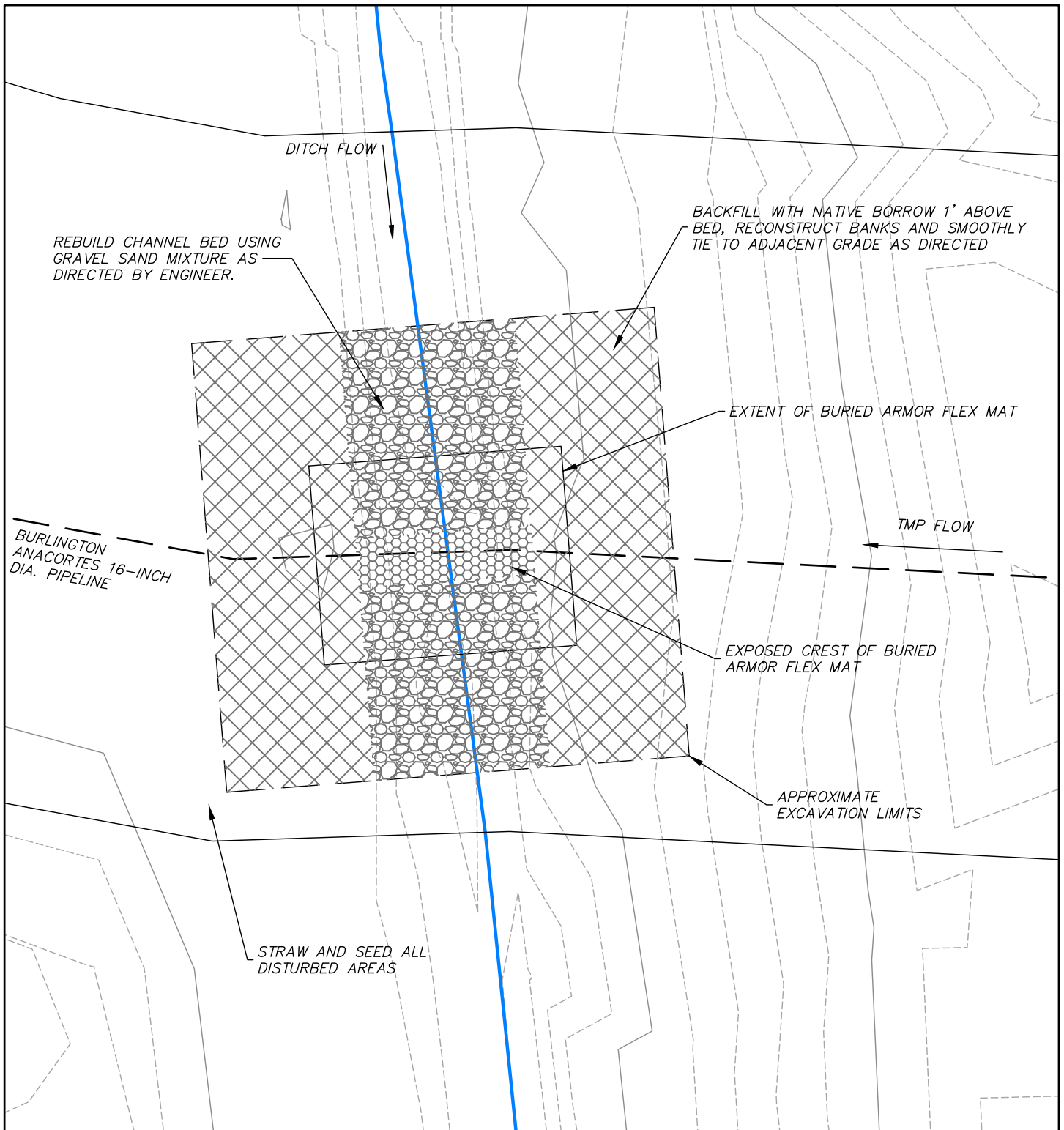
INDICATOR ENG. PROJECT #: 10034

#### REFERENCE:

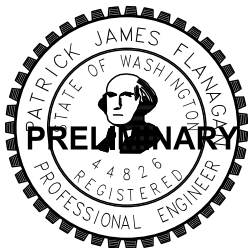
APPLICANT: *Trans Mountain Pipeline*  
PROPOSED PROJECT:  
*Swinomish Ditch Crossing Remediation*

COUNTY: *Skagit County, WA*  
LOCATION: *1000' South of SR20 and  
180' West of Swinomish Slough*

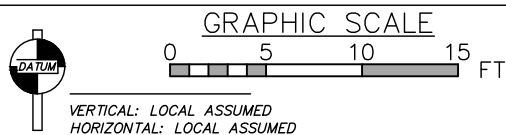
SHEET: *06 of 08*      DATE: *02/07/19*



## Restoration Plan



### TMP PORT DITCH CULVERT REPLACEMENT PLANNING 60% SUBMITTAL



INDICATOR ENG. PROJECT #: 10034

#### REFERENCE:

APPLICANT: *Trans Mountain Pipeline*  
PROPOSED PROJECT:  
*Swinomish Ditch Crossing Remediation*

COUNTY: *Skagit County, WA*  
LOCATION: *1000' South of SR20 and  
180' West of Swinomish Slough*

SHEET: 07 of 08      DATE: 02/07/19

## DESIGN NOTES

NOTES AND DESCRIPTION ARE BELOW FOR CERTAIN PROJECT ELEMENTS, MATERIALS AND CONSTRUCTION ACTIVITIES.

### 1. PIPELINE LOCATION AND ESTABLISHMENT

THE PIPELINE LOCATION AND PROFILE SHALL BE DETERMINED AND ESTABLISHED IN FIELD PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITIES.

### 2. WORKSITE ISOLATION AND DEWATERING

PRIOR TO EXCAVATION THE WORKSITE SHALL BE ISOLATED FROM DITCH FLOW THEN DEWATERED. PRIOR TO CONSTRUCTION ACTIVITIES THE CONTRACTOR SHALL SUBMIT A BASIC PLAN SATISFACTORY TO TMP OR THEIR REPRESENTATIVE THAT PROVIDES A METHOD OF ISOLATING AND DIVERTING DITCH FLOW AROUND THE WORK SITE. THE DRAINAGE DITCH CONVEYS RUNOFF FROM RAINFALL AND GROUNDWATER SEEPAGE. ANTICIPATED FLOWS IN THE DITCH ARE UP TO 2 CFS FOR TYPICAL STORMS.

### 3. EXCAVATION

EXCAVATION NEAR THE PIPELINE MUST COMPLY WITH TMP'S SPECIFICATIONS. IF COATING REPAIRS ARE NECESSARY THEN THE PIPE WILL BE REPAIRED AS DIRECTED BY TMP. NO WORK SHALL BEGIN UNTIL THE PIPELINE IS EXPOSED OR DIRECTLY ESTABLISHED WITHIN THE ZONE OF CONSTRUCTION. EXCAVATION SHALL CONTINUE TO COMPETENT SOILS AS DIRECTED, WHICH ARE ANTICIPATED WITHIN 0 TO 5-FT BELOW THE PIPE. SHORING MAY BE REQUIRED DEPENDING ON THE SOILS ENCOUNTERED.

### 4. INSTALL ROCK SHIELD AND PREPARE SUBGRADE

ROCK SHIELD REQUIRED IS TUFF-N-NUFF OR EQUIVALENT. LENGTH OF ROCK SHIELD WILL BE DETERMINED IN FIELD BY TMP. CONSTRUCT COMPACTED FOUNDATION USING GRAVEL BASE COURSE AS DIRECTED, WITH SAND SURROUNDING THE PIPE AS DIRECTED BY TMP. SUBGRADE SHALL BE PREPARED AND COMPACTED TO APPROXIMATELY 6-IN BELOW THE CONCRETE MAT. GEOTEXTILE FABRIC FOR SEPARATION (SPEC. TO BE DETERMINED) SHALL BE PLACED, THEN THE FINAL 6-IN BASE SHALL BE PLACED AND COMPACTED. SUBGRADE MUST BE INSPECTED AND APPROVED PRIOR TO BURIAL AND NEXT PHASE OF WORK.

### 5. PLACE ARMORFLEX CONCRETE BLOCK MAT

PLACE ARMORFLEX CLOSED CLASS 45 MAT ON APPROVED SUBGRADE. ALL BLOCKS OR PREASSEMBLED MATS SHALL BE TIED TOGETHER TO FORM A CONTIGUOUS SINGLE MAT. SUBSEQUENT TO MAT PLACEMENT AND CONNECTION, MECHANICAL SOIL ANCHORS SHALL BE INSTALLED AT ALL FOUR CORNERS, SEAMS, AND MID-SIDE AS DIRECTED.

### 6. BACKFILL CHANNEL BED AND BANKS

FINAL BED AND BANK SURFACES SHALL BE REASONABLY TIED INTO THE ORIGINAL BED SURFACE AT THE UPSTREAM AND DOWNSTREAM ENDS. A GRAVEL-SAND MIXTURE SHALL BE USED FOR THE CHANNEL BED MATERIAL AND FOR THE BANK MATERIAL TO 1 FOOT ABOVE THE CHANNEL BED. NATIVE BORROW WILL BE PLACED TO FINAL GRADE FOR ALL AREAS ABOVE 1 FOOT ABOVE THE CHANNEL BED.

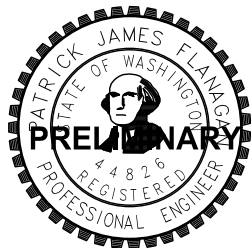
### 6. RESTORATION

TO BE DETERMINED

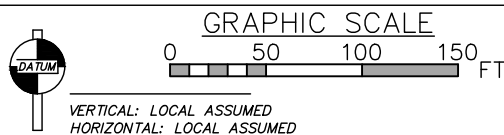
## SURVEY AND BASEMAP NOTES

1. SURVEY DATE: JANUARY 31, 2018 BY INDICATOR ENGINEERING PLLC
2. TOPOGRAPHIC SURVEY EQUIPMENT: TOPCON GPT-3007W TOTAL STATION
3. SURVEY REFERENC: SWINOMISH TRIBE BENCHMARK LOCATED TO SOUTH NEAR TIDE GATES. STATED COORDINATES N: 532896.181, E: 1232478.432, Z: 6.993 (FT)
4. HORIZONTAL DATUM: FEET. LOCAL ASSUMED (APPROX WA-HARN-N-F, ERROR UNKNOWN)
5. VERTICAL DATUM: FEET. LOCAL ASSUMED (APPROX NAVD88, ERROR UNKNOWN)
6. LIDAR WAS USED OUTSIDE OF SURVEY FOR GENERAL CONTOURS. LIDAR DATASET WAS 2006 USGS NORTH PUGET, POINTS.
7. SOFTWARE USED TO GENERATE DEM: CIVIL 3D 2016
8. PROJECTION: WASHINGTON STATE PLANE NORTH
9. PIPELINE LOCATED AT DITCH. REMAINING LOCATION OF PIPELINE BASED ON BGC REPORT (2015)
10. THIS DRAWING AND SURVEY WAS GENERATED EXCLUSIVELY FOR TRANS MOUNTAIN PIPELINE (PUGET SOUND) FOR THE SWINOMISH DRAINAGE DITCH CROSSING. THE DRAWING OR DATA SHOULD NOT BE USED FOR PURPOSES OTHER THAN THOSE INTENDED.

## Construction Notes



## TMP PORT DITCH CULVERT REPLACEMENT PLANNING 60% SUBMITTAL



INDICATOR ENG. PROJECT #: 10034

### REFERENCE:

APPLICANT: *Trans Mountain Pipeline*  
PROPOSED PROJECT:  
*Swinomish Ditch Crossing Remediation*

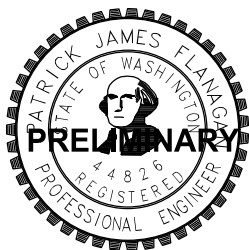
COUNTY: *Skagit County, WA*  
LOCATION: *1000' South of SR20 and  
180' West of Swinomish Slough*

SHEET: *08 of 08*      DATE: *02/07/19*





DRAFT - INTERNAL PLANNING ONLY



# **KM PORT DITCH CULVERT REPLACEMENT**

**PLANNING 60% SUBMITTAL**



VERTICAL: LOCAL ASSUMED  
HORIZONTAL: LOCAL ASSUMED

INDICATOR ENG. PROJECT #: 10034

REFERENCE:

APPLICANT: *Trans Mountain Pipeline*

PROPOSED PROJECT:

*Swinomish Ditch Crossing Remediation*

COUNTY: *Skagit County, WA*

LOCATION: *1000' South of SR20 and  
180' West of Swinomish Slough*

SHEET:xx of xx

DATE: 08/08/18

## **Background:**

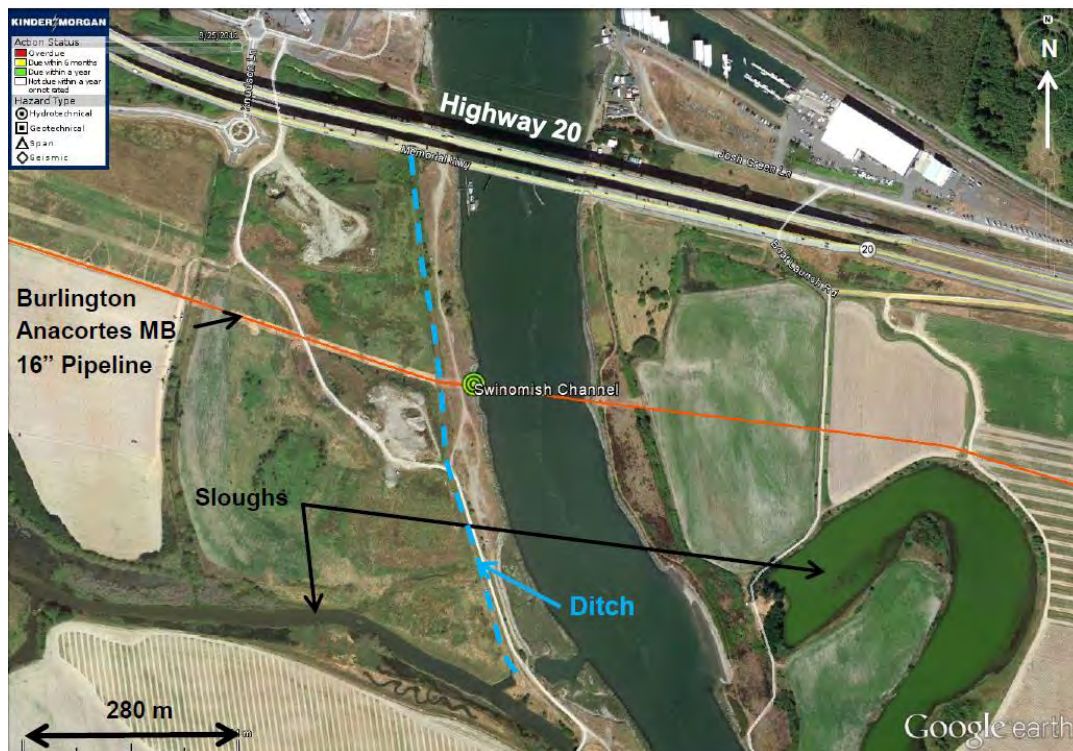
The project site is located where the Trans Mountain pipeline crosses a manmade drainage ditch at the west toe of the levee along the Swinomish Slough channel. The drainage ditch is open channel at the pipeline crossing and flows north to south. The ditch collects only a small drainage area as shown below originating near Highway 20 at the north and bounded by the levee to the east and the flat field to the west.

The pipeline crossing is about 1300 feet downstream of Highway 20, with a low gradient. Three access road culvert crossings were observed in the ditch: double barrel 36-inch corrugated metal pipe (CMP) upstream of the crossing at highway 20; 10" concrete pipe about 370 downstream of the crossing at an access road; and an 18" Corrugated HDPE with a tide gate at the ditch outlet.

The drainage ditch outlet to the old channel of Fornsby Slough is adjacent to two muted tidal regulators structures that are the northern connection for the Fornsby Slough network to the Swinomish Slough Channel that is connected to open ocean. The Swinomish tribe operates the tide gates which regulate tidal affects for the slough network and land west of the Swinomish Slough levee system where the crossing is located, which would otherwise be inundated during high tides. Swinomish Tribal Lands are immediately adjacent to this crossing.

- Latitude: 48.452241; Longitude: -122.515307
- Northing: 5366680; Easting: 535839

## **Site Location Map**





### **Brief Crossing History and Existing Risk:**

The drainage ditch crossing has apparently been stable with no observed changes to the site based on the available information. The crossing history was described as unchanged and stable during the last 30 years.

The pipeline has only 8 inches (0.2 meters) of cover in the channel and the existing cover provides no significant protection from impacts.

### **Site Photos:**



Pipeline Crossing in Foreground Marked with White Survey Rod - Facing north (Dec 2017)



View above Crossing, pipe underneath wood planks (Dec 2017)





## Appendix B – Wetland Determination Data Forms (USACE, Version 2.0)

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**WETLAND DETERMINATION DATA FORM**  
Western Mountains, Valleys, and Coast Supplement to the  
1987 COE Wetlands Delineation Manual

Project Site: <u>Swinomish Tribal Lands (SR20)</u>		Sampling Date: <u>12/4/19</u>	
Applicant/Owner: <u>Swinomish Tribe</u>		Sampling Point: <u>5P-91</u>	
Investigator: <u>A. Crispin</u>		City/County: <u>Skagit</u>	
Section, Township, Range: <u>see Delineation Report</u>		State: <u>WA</u>	
Landform (hillslope, terrace, etc) <u>Flood plain</u>		Slope (%) <u>&lt; 2.5</u>	
Subregion (LRR) A		Local relief (concave, convex, none)	
Soil Map Unit Name		Long	Datum NAD83 Zone 10
Are climatic/hydrologic conditions on the site typical for this time of year? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		NW1 classification <u>PEME</u>	
Are "Normal Circumstances" present on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		(If no, explain in remarks.)	
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> significantly disturbed?			
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> naturally problematic?		(If needed, explain any answers in Remarks.)	

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is this Sampling Point within a Wetland? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Hydric Soils Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Remarks:	

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet
1.				Number of Dominant Species that are OBL, FACW, or FAC: <u>2</u> (A)
2.				Total Number of Dominant Species Across All Strata: <u>2</u> (B)
3.				Percent of Dominant Species that are OBL, FACW, or FAC: <u>100</u> (A/B)
4.				
_____ = Total Cover				
Sapling/Shrub Stratum (Plot size <u>30' dia</u> )				
1.				<b>Prevalence Index Worksheet</b> Total % Cover of <span style="float:right">Multiply by</span> OBL species <span style="float:right">x 1 =</span> FACW species <span style="float:right">x 2 =</span> FAC species <span style="float:right">x 3 =</span> FACU species <span style="float:right">x 4 =</span> UPL species <span style="float:right">x 5 =</span> Column totals (A) (B)
2.				
3.				
4.				
5.				
_____ = Total Cover				
Herb Stratum (Plot size <u>" "</u> )				
1.				Prevalence Index = B / A =  <b>Hydrophytic Vegetation Indicators</b> <input checked="" type="checkbox"/> Dominance test is > 50% <input type="checkbox"/> Prevalence test is ≤ 3.0 * Morphological Adaptations * (provide supporting data in remarks or on a separate sheet) Wetland Non-Vascular Plants * Problematic Hydrophytic Vegetation * (explain)
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
_____ = Total Cover				
Woody Vine Stratum (Plot size _____)				
1.				* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic  <b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
2.				
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>10</u>				
Remarks:				

## SOIL

Sampling Point SP-A1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-10"	10YR 9/2	100					Silt	
10-16"	10YR 5/1	50	7.5YR 5/6	50	C	M	Silt	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains<sup>2</sup>Loc: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- |   |   |
|---|---|
| <input type="checkbox"/> Histosol (A1)                                | <input type="checkbox"/> Sandy Redox (S5)                         |
| <input type="checkbox"/> Histic Epipedon (A2)                         | <input type="checkbox"/> Stripped Matrix (S6)                     |
| <input type="checkbox"/> Black Histic (A3)                            | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4)                        | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                 |
| <input checked="" type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3)                     |
| <input type="checkbox"/> Thick Dark Surface (A12)                     | <input type="checkbox"/> Redox Dark Surface (F6)                  |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)                     | <input type="checkbox"/> Depleted Dark Surface (F7)               |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)                     | <input type="checkbox"/> Redox Depressions (F8)                   |

Indicators for Problematic Hydric Soils<sup>3</sup>

- |   |
|---|
| <input type="checkbox"/> 2cm Muck (A10)             |
| <input type="checkbox"/> Red Parent Material (TF2)  |
| <input type="checkbox"/> Other (explain in remarks) |

<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):

Type: \_\_\_\_\_

Hydric soil present?

Yes ☒No ☐

Depth (inches): \_\_\_\_\_

Remarks:

## HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply):

- |  |  |
|--|--|
| <input type="checkbox"/> Surface water (A1)                        | <input checked="" type="checkbox"/> Sparsely Vegetated Concave Surface (B8)    |
| <input checked="" type="checkbox"/> High Water Table (A2)          | <input type="checkbox"/> Water-Stained Leaves (except MLRA 1, 2, 4A & 4B) (B9) |
| <input checked="" type="checkbox"/> Saturation (A3)                | <input type="checkbox"/> Salt Crust (B11)                                      |
| <input type="checkbox"/> Water Marks (B1)                          | <input type="checkbox"/> Aquatic Invertebrates (B13)                           |
| <input type="checkbox"/> Sediment Deposits (B2)                    | <input type="checkbox"/> Hydrogen Sulfide Odor (C1)                            |
| <input type="checkbox"/> Drift Deposits (B3)                       | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)         |
| <input type="checkbox"/> Algal Mat or Crust (B4)                   | <input type="checkbox"/> Presence of Reduced Iron (C4)                         |
| <input type="checkbox"/> Iron Deposits (B5)                        | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)            |
| <input type="checkbox"/> Surface Soil Cracks (B6)                  | <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)               |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Other (explain in remarks)                            |

Secondary Indicators (2 or more required):

- |   |
|---|
| <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A & 4B) |
| <input type="checkbox"/> Drainage Patterns (B10)                        |
| <input type="checkbox"/> Dry-Season Water Table (C2)                    |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)      |
| <input type="checkbox"/> Geomorphic Position (D2)                       |
| <input type="checkbox"/> Shallow Aquitard (D3)                          |
| <input type="checkbox"/> FAC-Neutral Test (D5)                          |
| <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)                 |
| <input type="checkbox"/> Frost-Heave Hummocks                           |

Field Observations

Surface Water Present?

☐ Yes ☒ No

Water Table Present?

☒ Yes ☐ NoSaturation Present?  
(includes capillary fringe)☒ Yes ☐ No

Depth (in):

Depth (in):

Depth (in):

Wetland Hydrology Present?

Yes ☒No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**WETLAND DETERMINATION DATA FORM**  
**Western Mountains, Valleys, and Coast Supplement to the**  
**1987 COE Wetlands Delineation Manual**

Project Site: <u>see pg 1</u>		Sampling Date: <u>12/4/19</u>	
Applicant/Owner: _____		Sampling Point: <u>SP-UP1</u>	
Investigator: _____		City/County: <u>Snohomish</u>	
Section, Township, Range: _____		State: <u>WA</u>	
Landform (hillslope, terrace, etc) _____		Slope (%) _____	
Subregion (LRR) A _____		Local relief (concave, convex, none) _____	
Soil Map Unit Name _____		Long _____ Datum NAD83 Zone 10 _____	
Soil Map Unit Name _____		NW1 classification <u>N/A</u>	
Are climatic/hydrologic conditions on the site typical for this time of year? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		(If no, explain in remarks.) <u>Indication that some areas have been mowed.</u>	
Are "Normal Circumstances" present on the site? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> significantly disturbed?			
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> naturally problematic?		(If needed, explain any answers in Remarks.)	

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Is this Sampling Point within a Wetland? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Hydric Soils Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Wetland Hydrology Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Remarks: _____	

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet
1. _____				Number of Dominant Species that are OBL, FACW, or FAC: _____ (A)
2. _____				
3. _____				
4. _____				
_____ = Total Cover				Total Number of Dominant Species Across All Strata: _____ (B)
Percent of Dominant Species that are OBL, FACW, or FAC: _____ (A/B)				
<b>Sapling/Shrub Stratum (Plot size _____)</b>				
1. _____				<b>Prevalence Index Worksheet</b> Total % Cover of _____ Multiply by _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species <u>100</u> x 3 = <u>300</u> FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column totals <u>100</u> (A) <u>300</u> (B)
2. _____				
3. _____				
4. _____				
5. _____				
_____ = Total Cover				Prevalence Index = B / A = <u>3.0</u>
<b>Herb Stratum (Plot size <u>30'-diam</u>)</b>				
1. <u>Scheuchzeria palustris</u>		<u>80/4/FAC</u>		<b>Hydrophytic Vegetation Indicators</b> Dominance test is > 50% <u>NO</u> Prevalence test is ≤ 3.0 * Morphological Adaptations * (provide supporting data in remarks or on a separate sheet) Wetland Non-Vascular Plants * Problematic Hydrophytic Vegetation * (explain)
2. <u>Trifolium repens</u>		<u>20/N/FAC</u>		
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
_____ = Total Cover				* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic
<b>Woody Vine Stratum (Plot size _____)</b>				
1. _____				<b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
2. _____				
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>0</u>				
Remarks: <u>Vegetation is dominated by pasture seed mix grasses.</u>				

## SOIL

Sampling Point

SP UPI

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-6	10YR 2/2	100	—	—	—	—	Silt	
6-16	10YR 3/2	100	—	—	—	—	Sandy silt	fill?

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains<sup>2</sup>Loc: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- |  |   |
|--|---|
| <input type="checkbox"/> Histosol (A1)                     | <input type="checkbox"/> Sandy Redox (S5)                         |
| <input type="checkbox"/> Histic Epipedon (A2)              | <input type="checkbox"/> Stripped Matrix (S6)                     |
| <input type="checkbox"/> Black Histic (A3)                 | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4)             | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                 |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3)                     |
| <input type="checkbox"/> Thick Dark Surface (A12)          | <input type="checkbox"/> Redox Dark Surface (F6)                  |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)          | <input type="checkbox"/> Depleted Dark Surface (F7)               |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)          | <input type="checkbox"/> Redox Depressions (F8)                   |

Indicators for Problematic Hydric Soils<sup>3</sup>

- |   |
|---|
| <input type="checkbox"/> 2cm Muck (A10)             |
| <input type="checkbox"/> Red Parent Material (TF2)  |
| <input type="checkbox"/> Other (explain in remarks) |

<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):

Type: \_\_\_\_\_

Hydric soil present?

Yes ☐No ☒

Depth (inches): \_\_\_\_\_

Remarks:

## HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required: check all that apply):

- |  |  |
|--|--|
| <input type="checkbox"/> Surface water (A1)                        | <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)               |
| <input type="checkbox"/> High Water Table (A2)                     | <input type="checkbox"/> Water-Stained Leaves (except MLRA 1, 2, 4A & 4B) (B9) |
| <input type="checkbox"/> Saturation (A3)                           | <input type="checkbox"/> Salt Crust (B11)                                      |
| <input type="checkbox"/> Water Marks (B1)                          | <input type="checkbox"/> Aquatic Invertebrates (B13)                           |
| <input type="checkbox"/> Sediment Deposits (B2)                    | <input type="checkbox"/> Hydrogen Sulfide Odor (C1)                            |
| <input type="checkbox"/> Drift Deposits (B3)                       | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)         |
| <input type="checkbox"/> Algal Mat or Crust (B4)                   | <input type="checkbox"/> Presence of Reduced Iron (C4)                         |
| <input type="checkbox"/> Iron Deposits (B5)                        | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)            |
| <input type="checkbox"/> Surface Soil Cracks (B6)                  | <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)               |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Other (explain in remarks)                            |

Secondary Indicators (2 or more required):

- |   |
|---|
| <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A & 4B) |
| <input type="checkbox"/> Drainage Patterns (B10)                        |
| <input type="checkbox"/> Dry-Season Water Table (C2)                    |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)      |
| <input type="checkbox"/> Geomorphic Position (D2)                       |
| <input type="checkbox"/> Shallow Aquitard (D3)                          |
| <input type="checkbox"/> FAC-Neutral Test (D5)                          |
| <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)                 |
| <input type="checkbox"/> Frost-Heave Hummocks                           |

Field Observations

Surface Water Present?

☐

Yes

☐

No

Depth (in):

Water Table Present?

☐

Yes

☐

No

Depth (in):

Saturation Present?

☐

Yes

☐

No

Depth (in):

(includes capillary fringe)

Wetland Hydrology Present?

Yes ☐No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

## **ATTACHMENT F**

April 6, 2018 Letter Brief prepared by Indicator Engineering



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# INDICATOR ENGINEERING

APRIL 6, 2018

## LETTER BRIEF

**TO:**

**Dan Chow, Kinder Morgan Canada**

**FROM:**

**Pat Flanagan, PE**

**Mark Lovrin, EIT**

**CC:**

**PROJECT: 10034**

**Via: Email**

**RE: KM Trans Mountain Puget Sound Burlington Anacortes Pipeline – Swinomish Ditch Crossing**

---

This letter provides you with a brief summary of the analysis and risk remediation concepts for the Kinder Morgan (KM) Puget Sound Burlington Anacortes MB 16" pipeline crossing of the Swinomish drainage ditch, west of the Swinomish Slough at approximately MP 6.02.

## 1 SITE CONDITIONS

### BASIC SITE LAYOUT

The project site is located where the Kinder Morgan pipeline crosses a manmade drainage ditch at the west toe of the levee along the Swinomish Slough channel. The drainage ditch is open channel at the pipeline crossing and flows north to south. The ditch collects only a small drainage area as shown in Figure 1 originating near Highway 20 at the north and bounded by the levee to the east and the flat field to the west. The pipeline crossing is about 1300 feet downstream of highway 20, with a low gradient. Three access road culvert crossings were observed in the ditch: double barrel 36-inch corrugated metal pipe (CMP) upstream of the crossing at highway 20; 10" concrete pipe about 370 downstream of the crossing at an access road; and an 18" Corrugated HDPE with a tide gate at the ditch outlet. The drainage ditch outlet to the old channel of Fornsby Slough is adjacent to two muted tidal regulators structures that are the northern connection for the Fornsby Slough network to the Swinomish Slough Channel that is connected to open ocean. The tide gates regulate tidal affects for the slough network and land west of the Swinomish Slough levee system where the crossing is located, which would otherwise be inundated during high tides.

Indicator Engineering visited the site, inspected channel conditions, conducted a survey, and analyze LiDAR topographic information on December 17, 2017 and January 31, 2018. Landuse in the basin is generally low-lying grassy agricultural land. The upstream end of the drainage ditch appears to end at wet ponds under highway 20, however these wet ponds may have additional outlet to the northwest that was not located due to dense vegetation and stagnant ponded conditions. The drainage basin (Figure 1) has been conservatively assumed to include the ponds.

## HISTORY OF CROSSING

The drainage ditch crossing has apparently been stable with no observed changes to the site based on the available information. The crossing history was described as unchanged during the last 30 years (Patrick Davis, KM, personal communication), and also briefly described as stable (KM 2015). Aerial photographs were reviewed from 1998 to 2017 and show no significant changes to the drainage ditch crossing, other than modifications to the drainage ditch outlet in 2014.

## HYDROLOGIC ANALYSIS

Three potential hydrologic mechanisms to generate high ditch flows were identified and investigated: rainfall generated flows in the basin; tidal dominated flows; and seepage through the levee.

### Rainfall Generated

USGS regional regression equations (2016) were used to estimate rainfall generated peak flows in the drainage ditch as no flow measurements are known to exist. The region 3 equation was applied using a drainage area of 21.9 acres and a mean annual precipitation of 30 inches (source: OCS PRISM data). The estimated peak annual flows in the drainage ditch are shown in Table 1. The upstream ponds may also provide a delayed release of water to the drainage ditch.

**Table 1 Rainfall based flow estimates in the drainage ditch.**

Annual Probability of Exceedance (%)	Recurrence Interval (years)	Discharge (cfs)	Discharge (cms)
50%	2	0.54	0.015
10%	10	0.89	0.032
4%	25	1.45	0.041
2%	50	1.68	0.048
1%	100	1.94	0.055
0.2%	500	2.55	0.072

### Tidal Influenced Flows

The drainage ditch and Fornsby slough network is below high tide and controlled by several tide gates. The physical tide gates have changed over the years as has the operations (NHC 2017), which impacts tidal water prisms in the drainage ditch. The current ditch outfall features a tide gate to prevent backflow of water from the old Fornsby Slough channel. However, this outfall was constructed in 2014, and prior to that the ditch had an open unregulated connection to old Fornsby Slough. Given the tide gate on the drainage ditch outfall, water levels in old Fornsby Slough would have to reach approximately 5.2 ft (LiDAR) to over top the fill and backwater the drainage ditch. The thalweg elevation at the pipeline crossing is 2.0-2.2 ft, while the top of the boards are at 2.5-2.8 ft (NAVD-88). The maximum water surface observed for in the old Fornsby channel was about 4.8 ft during a few month period of 2015 when monitoring was in place (NHC 2017). There is a reasonable probability the old Fornsby Slough channel could experience water levels high enough to overtop and flow into the drainage ditch depending on future gate operations and tides. A more detailed study of the impact of gate operations and tidal statistics has not been completed, and our understanding is that the gate operations may change in the future to allow more flow into the Fornsby Slough system.

### Seepage and Groundwater

The location of the drainage ditch at the landward toe of the Swinomish Slough levee allows for seepage through the levee to be collected. Active upwelling seeps were visible in the channel bed during the December 7, 2017

site visit. Seepage rates are heavily influenced by the tidal cycle, especially cycles of prolonged high tides. The previous study of the Fornsby Slough system determined that seepage through the levee and groundwater contributions were much more significant than surface water inflow (NHC 2017). The Swinomish Slough levee is reportedly mostly built from sandy dredge spoils, and seeps have been observed by others as well.

The discharge in the drainage ditch on January 31, 2018 was estimated using the surveyed water surface profile, observed velocities, and the hydraulic model. The flow was estimated to be in the range of 1 to 1.5 cfs, which is much higher than the estimated rainfall contribution. Given that the preceding period was relatively dry, and the previously observed upwelling, we believe these flows are primarily seepage baseflow. Maximum seepage during extreme high tides could represent the highest flow conditions in the drainage ditch.

## CHANNEL FLOW AND GEOMORPHIC CONDITIONS

A one-dimensional HEC-RAS hydraulic model of the drainage ditch was developed to estimate depths, velocities and scour/erosion potential at the pipeline crossing. The ditch was surveyed from 70 feet upstream of the pipeline crossing to 440 feet downstream, including the access road culvert about 370 feet downstream. The effects of the drainage ditch outfall culvert further downstream were estimated using the available LiDAR data (Sanborn 2008) and site inspection.

A wide envelope of flows from 1 to 14 cfs were simulated to represent the range of possible flows that could be encountered considering rainfall, seepage and tidal influences. The approximate range of velocity that was observed during the survey was used with surveyed water surface profile to determine Manning's *n* roughness of 0.040 for smooth channel and 0.080 for vegetated channel sections. The access road culvert 370 feet downstream of the crossing was nearly full of sediment at the outlet during the site visit, and therefore an exact measurement of culvert size was not possible, and the culvert was estimated as either 10 or 12 inches in diameter. The hydraulic model varied the size and blockage amount in the culvert, as the culvert was a significant hydraulic control for flow conditions at the crossing.

The simulated water surface profiles are shown in Figure 3 for a range of flows. Typical channel velocities at the crossing reach are calculated as 0.2 to 0.5 ft/s, with the protruding boards directly above the pipeline causing local flow acceleration. The highest velocities simulated in the ditch sections were up to 0.7 ft/s. These velocities correspond to the fine sand and silt bed conditions encountered and have limited transport capacity (Yang 2003). The higher flows simulated did not result in higher velocities as the downstream access road culvert would create a backwater condition in the ditch. The highest velocities in the downstream reach generally occurred between 1 and 3 cfs. Thus, no significant scour or erosion is anticipated, nor was it observed, at the pipeline crossing. Conditions encountered during the site visit are shown in the attached photos (Figure 4 to Figure 10).

## 2 EXISTING RISK

The site inspection and survey showed that the pipeline has only 8 inches (0.2 meters) of cover in the channel. The ground profile is shown in Figure 11 and shows that the pipeline is nearly exposed for a length of 6 to 8 feet. Light probing with a blunt rod between the wood boards located the pipeline as the cover material is unconsolidated loose silt/sand ditch bed material. Thus, the existing cover provides no significant protection from impacts. The 2015 screening level analysis (KM) was able to screen out all typical risks, though identified a potential (low probability) risk from equipment or materials crossing the ditch at this location. We agree with this assessment and did not find instabilities of the ditch channel that are likely to further expose the pipeline.

The ditch crossing appears stable and there are no indications the crossing has changed over the years, based on information from Kinder Morgan (2018), the 2015 site investigation (KM), 2014 survey (BGC/Holland), and aerial

photographs. The drainage ditch outlet has been reconfigured in the last few years to move slightly and have a backflow preventing tide gate, however the ditch channel at the crossing is expected to remain stable or aggrade. Changes to tide gate operations could affect water levels and flow conditions in the ditch, as well as head differential across the levee and seepage rates. The Swinomish tribe operates the tide gates and has experimented with different configurations and will likely continue to modify operations in the future. Thus, the ditch should continue to be monitored at regular intervals for erosion and degradation, though rapid changes to the crossing are not anticipated.

Section 3 outdated

### 3 RECOMMENDED RISK REMEDIATION DESIGN

The crossing appears to be stable with low risk identified, however the pipeline is nearly exposed and reliable coverage has been previously recommended for long-term implementation (KM 2015). The following risk remediation options were considered:

- Concrete set-on weight placed on pipeline and extended into ditch banks.
- Articulated concrete block mattress placed over pipeline and extended into banks.
- Rock riprap blanket covering the ditch bed and banks. Relatively small rounded rock (gravels and cobbles) would be used for the riprap layer given the low flow conditions in the ditch. A riffle would be constructed on the downstream side of the crossing to maintain aquatic passage during low flow conditions.
- Pipeline relocation to bury deeper at crossing.

The concrete set-on weight or articulated block mattress are recommended. The concrete set-on weight would be minimally intrusive and provide reliable protection assuming it can be constructed with a sand layer or foam cushion between the concrete and the pipe. A 6-inch-thick sand cushion and a 6 to 12 inch height of the concrete set-on weight would result in ditch bed elevation increase of 0 to 6 inches at the crossing. Streambed gravels would be imported and placed upstream and downstream of the concrete weight to smoothly tie to the existing ditch bed. This concept is shown in Figure 12. This is the least intrusive option and would closely follow the existing crossing configuration.

The articulated concrete block mattress is equally preferable to the set-on weight. The benefit of the concrete blocks over the set-on weight is that a 6 to 12 inch layer of sand cushion could be readily constructed between the pipeline and the concrete blocks, providing reliable protection. However, the concrete blocks would require additional construction effort and the longer section of ditch bed with exposed concrete. The additional exposed concrete in the ditch would be less desirable during permitting and could require additional mitigation. This concept would be similar to the Schell Creek crossing constructed in 2012.

The rock riprap is less preferable due to the small vertical distance between the top of the pipe and the ditch bed, resulting in a bit less protection for the crossing than the concrete options. A relatively thin layer (6 to 12 inches thick) of gravel and cobbles could be installed above the pipeline and connected to the adjacent ditch bed. This concept would increase cover and protection of the pipeline compared to existing conditions, however the gravel cobble material may not provide as significant protection to the pipeline from farm equipment/machinery as the concrete options. This concept is shown in Figure 13.

Exposing extended lengths of the pipeline and burying deeper at the ditch crossing is not recommended at this time due to cost and construction risk. Moving the pipeline vertically at this crossing would require excavation into the Swinomish Channel Levee system, which presents significant risk during construction.

## 4 REFERENCES

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## 5 CLOSING

The above summarizes the initial analysis and conceptual designs for the Kinder Morgan Puget Sound Pipeline Anacortes Branch crossing of the Swinomish drainage ditch. If you have any questions, comments or would like to discuss next steps, please contact Pat Flanagan via email or at (206) 651-5103.

Respectfully Submitted,

Indicator Engineering PLLC

Prepared by:



Patrick Flanagan, PE

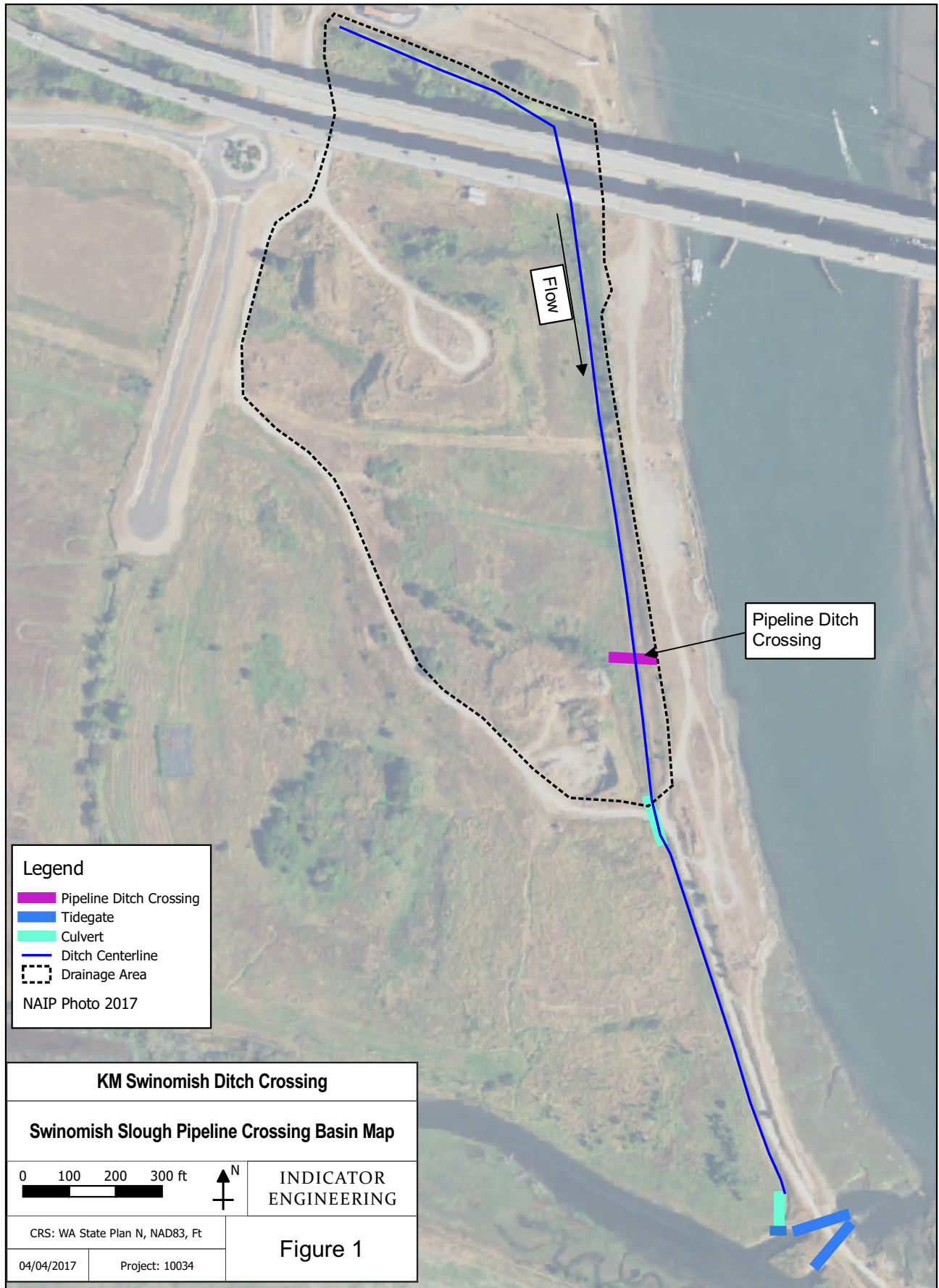
ENCLOSED:

- Figure 1** *Basin Map of Drainage Ditch to Pipeline Crossing*  
**Figure 2** *Survey Map (plan view and description of survey)*  
**Figure 3** *HEC-RAS Water Surface Profiles for Drainage Ditch*  
**Figure 4** *Photo(2017-Dec-07): Stakes and survey rod showing the pipeline crossing of the drainage ditch. The ditch is on the landward toe of levee, and the far marker is located near the top of the levee.*  
**Figure 5** *Photo(2018-Jan-31): Stake showing the pipeline crossing of the drainage ditch looking west. The pipeline corridor is visible in the distance as the mown field.*  
**Figure 6** *Photo(2017-Dec-07): Looking upstream (north) at pipeline crossing shown marked by rod, highway 20 in distance.*  
**Figure 7** *Photo(2017-Dec-07): Viewing across the drainage ditch at the pipeline crossing. Three wood boards are placed at the channel surface protecting pipeline. The bed consists of loose fines (sand/silts).*  
**Figure 8** *Photo(2017-Dec-07): Looking downstream from pipeline crossing at the drainage ditch. The Swinomish Channel levee is on the left, while earth stockpiles are visible on the right.*  
**Figure 9** *Photo(2017-Dec-07): Downstream outlet of drainage ditch to old Fornsbys Slough, viewing downstream at the fill prism and culvert.*  
**Figure 10** *Photo(2017-Dec-07): Drainage ditch outlet to old Fornsbys Slough channel. The drainage ditch now has a 18 inch culvert with a backflow preventing tide gate on it.*  
**Figure 11** *Elevation Pipeline Profile at Drainage Ditch Crossing, Indicator 2018 Survey Overlain on 2015 BHC Figure*  
~~**Figure 12** *Conceptual Design of Concrete Set on Weight*~~  
~~**Figure 13** *Conceptual Design of Cobble Riprap Backfill*~~



outdated







Name: p1anogan Date: Apr 06, 2018-04:28:10pm File: C:\indicator\Projects\10034\_KMSwinomish\CAD\KM\_Swin\_Basemap\_v6.dwg



- NOTE:
- 1) SURVEY DATE: JANUARY 31, 2018 BY INDICATOR ENGINEERING PLLC
  - 2) TOPOGRAPHIC SURVEY EQUIPMENT: TOPCON GPT-3007W TOTAL STATION
  - 3) SURVEY REFERENCED SWINOMISH TRIBE BENCHMARK LOCATED TO SOUTH NEAR TIDE GATES. COORDINATES N: 532896.181, E: 1232478.432, Z: 6.993 (FT)
  - 4) HORIZONTAL DATUM: FEET. LOCAL ASSUMED (APPROX WA-HARN-N-F)
  - 5) VERTICAL DATUM: FEET. LOCAL ASSUMED (APPROX NAVD88)
  - 6) SOFTWARE USED TO GENERATE DEM: CIVIL 3D 2016
  - 7) PROJECTION: WASHINGTON STATE PLANE NORTH
  - 8) LOCATION OF PIPELINE SHOWN APPROXIMATED FROM BGC REPORT, 2015
  - 9) THIS DRAWING AND SURVEY WAS GENERATED EXCLUSIVELY FOR KINDER MORGAN FOR THE SWINOMISH DRAINAGE DITCH CROSSING. THE DRAWING OR DATA SHOULD NOT BE USED FOR PURPOSES OTHER THAN THOSE INTENDED.

No.	DATE	BY	ISSUED PLAN SET / REVISION
1			
2			
3			
4			

DATA	DESIGN	DRAWN	CHECK
BASE:	PJF	MPL	PJF
PLAN:			
HORIZ. DATUM:	LOCAL ASSUMED		
VERT. DATUM:	LOCAL ASSUMED/NAVD88		

DATE:	APRIL 05, 2018
JOB No:	10034

INDICATOR  
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PROJECT: KINDER MORGAN 16" BURLINGTON ANACORTES MB SWINOMISH DRAINAGE DITCH CROSSING	SHEET: 2
TITLE: SURVEY MAP	OF:



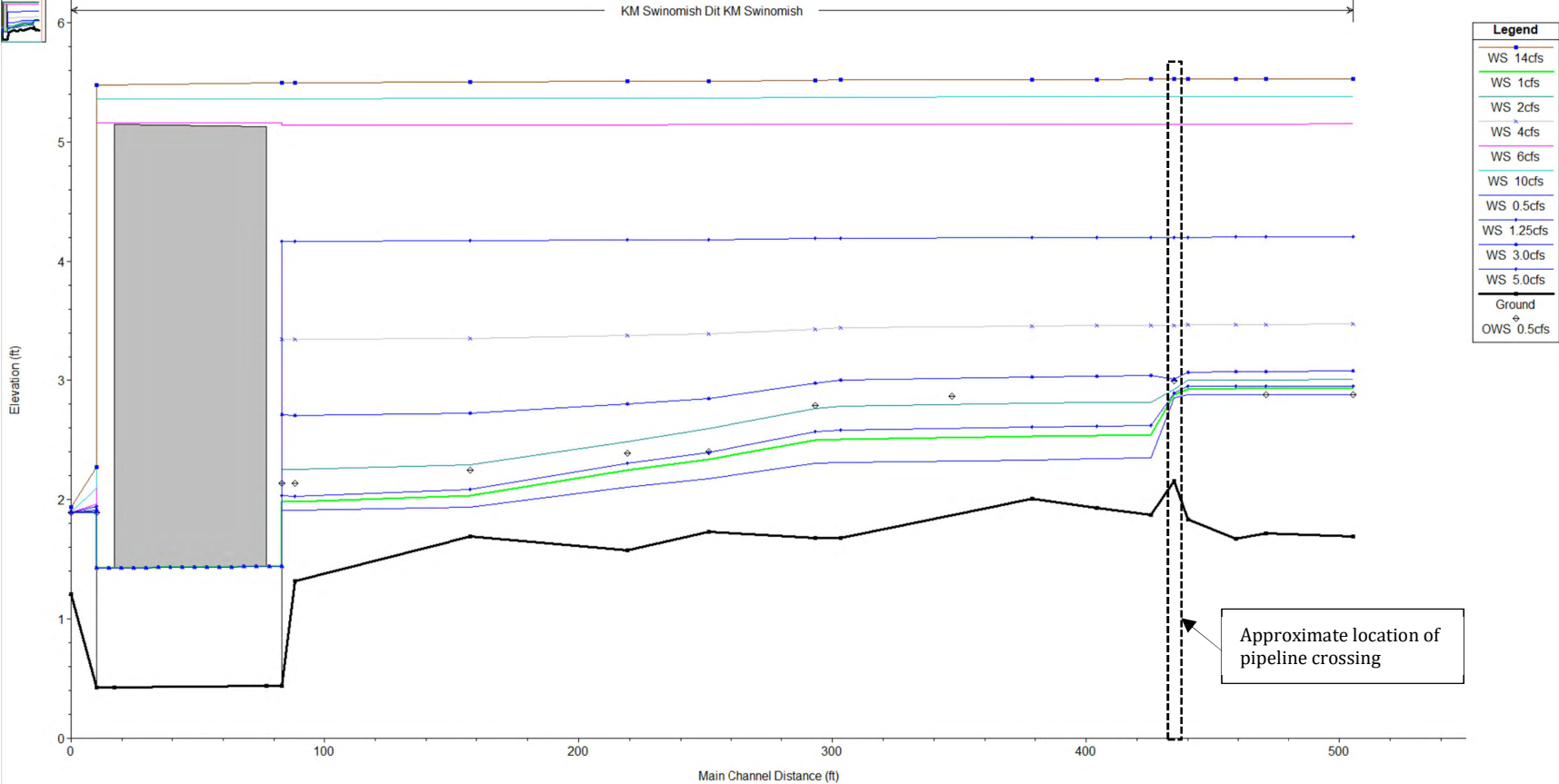


Figure 3 HEC-RAS Water Surface Profiles for Drainage Ditch



***Figure 4 Photo(2017-Dec-07): Stakes and survey rod showing the pipeline crossing of the drainage ditch. The ditch is on the landward toe of levee, and the far marker is located near the top of the levee.***



***Figure 5 Photo(2018-Jan-31): Stake showing the pipeline crossing of the drainage ditch looking west. The pipeline corridor is visible in the distance as the mown field.***





**Figure 6 Photo(2017-Dec-07): Looking upstream (north) at pipeline crossing shown marked by rod, highway 20 in distance.**



**Figure 7 Photo(2017-Dec-07): Viewing across the drainage ditch at the pipeline crossing. Three wood boards are placed at the channel surface protecting pipeline. The bed consists of loose fines (sand/silts).**





***Figure 8 Photo(2017-Dec-07): Looking downstream from pipeline crossing at the drainage ditch. The Swinomish Channel levee is on the left, while earth stockpiles are visible on the right.***



***Figure 9 Photo(2017-Dec-07): Downstream outlet of drainage ditch to old Fornsbys Slough, viewing downstream at the fill prism and culvert.***



**Figure 10**      *Photo(2017-Dec-07): Drainage ditch outlet to old Fornsbys Slough channel. The drainage ditch now has a 18 inch culvert with a backflow preventing tide gate on it.*



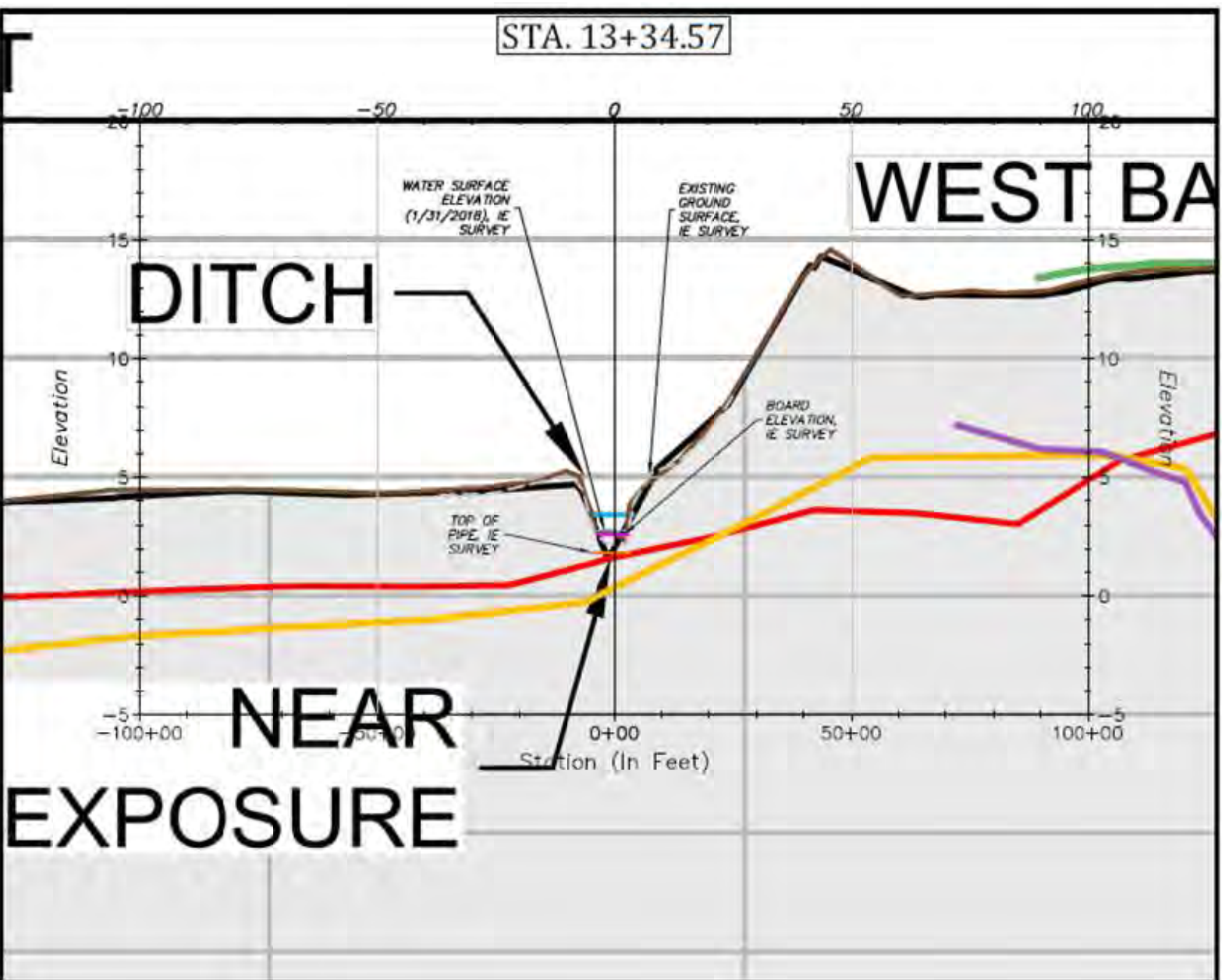


Figure 11

Elevation Pipeline Profile at Drainage Ditch Crossing, Indicator 2018 Survey Overlain on 2015 BHC

## **ATTACHMENT G**

Environmental Protection Plan

**DRAFT ENVIRONMENTAL PROTECTION PLAN  
TRANS MOUNTAIN PIPELINE SWINOMISH DITCH CROSSING  
SKAGIT COUNTY, WASHINGTON**

*prepared for*

Trans Mountain Pipeline (Puget Sound) LLC  
7815 Shellmont Street  
Burnaby B.C. V5A459

*prepared by*

Whatcom Environmental Services  
228 East Champion Street, Suite 101  
Bellingham, Washington 98225

April 2019



## TABLE OF CONTENTS

	Page
EXECUTIVE SUMMARY .....	iii
1.0 INTRODUCTION .....	1
1.1 Project Description .....	1
1.2 Site Description .....	1
1.3 Site History .....	2
1.4 Permitting .....	3
2.0 ROLES AND RESPONSIBILITIES.....	4
3.0 IMPACTS AND MITIGATION.....	5
3.1 Potential Impacts.....	5
3.2 Mitigation Strategies.....	5
3.2.1 Staging Areas .....	5
3.2.2 Chemical Storage .....	6
3.2.3 Equipment Operation and Maintenance .....	6
3.2.4 Soil and Sediment Control .....	6
3.2.5 Soil and Vegetation Repair.....	6
3.2.6 Stormwater .....	7
3.2.7 Timing .....	7
3.2.8 Stream Bypass and Excavation De-watering .....	8
3.2.9 Pipeline Protection.....	8
3.3 Long-Term Project Benefits .....	8
4.0 MONITORING PROGRAM.....	9
4.1 Heavy Equipment .....	9
4.2 Soils and Sediment.....	9
4.3 Water Quality .....	9
5.0 NOTIFICATION PROCEDURES.....	11
6.0 IMPLEMENTATION SCHEDULE .....	13
7.0 PLAN CERTIFICATION AND ACCEPTANCE .....	14

## LIST OF APPENDICES

Appendix A.	Determination of Non-Significance
Appendix B.	Shorelines and Sensitive Areas Permit
Appendix C.	Environmental Orientation Record

## **EXECUTIVE SUMMARY**

This plan describes procedures to protect the environment during construction activities associated with the Swinomish Ditch Crossing project. This project will install a protective flexible concrete mat (ArmorFlex) over a 20 foot stretch of pipeline to provide protection from impacts. The pipeline currently has only 8 inches (0.2 meters) of cover in the channel.

Permanent adverse impacts are limited to 48 square feet of new impervious surface where the concrete mat is exposed on the bottom of the drainage ditch. Permanent impacts are expected to be *de minimis*.

Potential temporary adverse impacts of the project have been minimized and unavoidable impacts will be mitigated. Potential impacts include:

- Introduction of chemical pollutants to water.
- Introduction of turbidity or sediments to water.
- Damage to vegetation and soil.
- Damage to pipeline infrastructure.

Mitigation approach:

- Keep chemical storage areas away from water and appropriately contained.
- Inspect equipment for leaks before working each day and repair promptly.
- Implement appropriate sediment control best management practices.
- Schedule work during the dry season.
- Protect soft ground from heavy equipment as needed using “mud mats”.
- Have contingency measures in place should water flow be encountered.
- Minimize area of excavation.
- Repair unavoidable temporary impacts to the vegetation and soil.
- Follow Trans Mountain safety protocols to prevent contact with the active line.

This plan does not supersede any applicable permit requirements, environmental regulations, or other management practices and is intended to supplement the existing contracts and management practices for the project.

## **1.0 INTRODUCTION**

The project site is located approximately 1000 feet south of SR20 and 180 feet west of Swinomish Slough. The site location is shown on Sheet 1.

### **1.1 PROJECT DESCRIPTION**

The goal of this project is to install improve pipeline safety by protecting the pipeline from potential physical impact. The protection will be installed where the Trans Mountain Pipeline (TMP) Puget Sound Burlington Anacortes MB 16" line crosses the Swinomish drainage ditch, located west of the Swinomish Slough at approximately MP 6.02. The pipeline currently has only 8 inches (0.2 meters) of cover in the channel. The design utilizes an ArmorFlex concrete block mattress to provide cover and protection for the exposed section. The design assumes that a small compacted gravel foundation will be built to provide support and stability for the ArmorFlex concrete blocks mattress.

Field activities will proceed as follows:

- 1) Isolate work area and dewater if necessary.
- 2) Expose pipeline using an excavator and hand tools. Overburden will be stockpiled onsite for re-use as backfill.
- 3) Inspect exposed pipeline and install protective coating (rock shield) as needed.
- 4) Install compacted gravel foundation and backfill excavation.
- 5) Place Armor Flex concrete block mat.
- 6) Stabilize backfilled surfaces with appropriate armoring, tie to existing channel with streambed aggregate, and re-vegetate disturbed areas.

### **1.2 SITE DESCRIPTION**

The site is approximately 1000 feet south of SR20 and 180 feet west of Swinomish Slough. The property is undeveloped with no other structures onsite. Adjacent areas to

the west and south are open fields, to the north are fields containing additional utility easements, and to the east is the Swinomish Slough channel levee.

The site is owned by the Swinomish Tribal Community (U.S. Government Holding). Work will be conducted within the existing Trans Mountain Oil Pipeline right-of-way easement. The easement includes a strip of land fifty feet in width running thirty feet on the north side and twenty feet on the south side of the existing pipeline. Vegetation growing on the easement is regularly mowed and the area is kept clear of tall vegetation.

The site is generally flat, with one stormwater drainage ditch. The ditch runs along the western toe of the Swinomish levee. Numerous wetlands are located in the general area and the project will be conducted in an area designated as a Swinomish Tribe Class 2 wetland (Swinomish Tribal Code 19-04.410). Additional wetland information can be found in the May 7, 2019 Wetland Delineation Report prepared by Element Solutions.

Slopes on the site and surrounding area are generally up to 2%; however, the levee adjacent to the stormwater ditch in which work will be performed contains relatively steep banks with slopes up to 25%. There are no areas of visible soil erosion on banks within the stormwater drainage ditch. There are no indications of unstable soils on the remainder of the site.

Soils on the site are generally the *Tacoma silt loam* (<https://websoilsurvey.sc.egov.usda.gov>. Accessed March 8, 2019). The typical profile of *Tacoma silt loam* is:

0 to 10 inches: silt loam

10 to 50 inches: silt loam

50 to 60 inches: silt loam

### **1.3 SITE HISTORY**

The drainage ditch crossing has apparently been stable with no observed changes to the site based on the available information. The crossing history was described as unchanged and stable during the last 30 years. The pipeline has only 8 inches (0.2 meters) of cover in the channel and the existing cover provides no significant protection from impacts.

#### **1.4 PERMITTING**

Permits governing environmental compliance of this project include the following:

- Shorelines and Sensitive Areas Permit #2277; issued by the Swinomish Indian Tribal Community.
- Nationwide Permit #12 (Utility Line Activities); issued by the US Army Corps of Engineers.

INSERT ADDITIONAL PERMITTING INFORMATION AS NEEDED

## 2.0 ROLES AND RESPONSIBILITIES

**Project Owner:** Trans Mountain Pipeline

**Trans Mountain Pipeline**                      **Dan Chow**                      **(604) 209-1351 (cell)**

**Project Manager Responsibilities:** 1) Project scheduling.

- 2) Coordinate all contractors.
- 3) Environmental reporting, as needed.
- 4) Ongoing monitoring and maintenance after project completion.
- 5) Provide onsite pipeline integrity safety personnel.

**Whatcom Environmental Services**                      **Dan Heimbigner**                      **(360) 752-9571**

**Environmental Contractor Responsibilities:** 1) Permit Acquisitions (complete).

- 2) Lead Environmental Orientation (see Appendix C).
- 3) Provide onsite environmental monitoring personnel.
- 4) Communicate environmental monitoring results to Project Manager.

**Construction**    **To be determined**                      **(206) xxx-xxxx**

**Construction Contractor Responsibilities:**

- 1) Coordinate and operate all heavy machinery onsite.
- 2) Ensure construction personnel comply with all environmental protection measures including inspecting heavy equipment daily, installing erosion control BMPs, and implementing stream bypass procedures.
- 3) Supply, and have on-hand, all stream bypass materials.
- 4) Provide immediate response to environmental issues if appropriately trained to do so.

**Indicator Engineering**    **Pat Flanagan**                      **(206) 550-3920**

**Engineering Contractor Responsibilities:** 1) Design project.

- 2) Provide clarifications and modifications to specifications, as needed.
- 3) Provide site restoration plans

### **3.0 IMPACTS AND MITIGATION**

This section describes the potential impacts, mitigation strategies, and long-term benefits of the project.

#### **3.1 POTENTIAL IMPACTS**

Potential environmental impacts of the project will be prevented and/or minimized using the mitigation strategies described in Section 3.2. Potential impacts of the project may include:

- Introduction of chemical pollutants to water.
- Introduction of turbidity or sediments to water.
- Damage to vegetation and soils.
- Damage to pipeline infrastructure.
- Creation of new impervious surfaces.

#### **3.2 MITIGATION STRATEGIES**

The project has been designed to avoid and minimize temporary and permanent impacts to the maximum extent possible. Design elements used to accomplish this goal include but are not limited to minimizing new impervious surfaces, minimizing the excavation extents, scheduling work within the dry season, minimizing the duration of work activities and restoring and revegetating the site. The following strategies will be implemented in the field to mitigate potential adverse impacts during the project, and after the project is complete.

##### **3.2.1 Staging Areas**

Staging areas will be established and maintained in a manner to prevent any harmful materials from entering waters of the state. The primary staging area is expected to be near the gravel access road west of the work site and outside of identified wetlands. Storage, fueling, and maintenance activities will be conducted in the staging area.

### **3.2.2 Chemical Storage**

All chemicals will be stored in the staging area under cover with adequate containment.

### **3.2.3 Equipment Operation and Maintenance**

Equipment will be inspected by the equipment operator for leaks before beginning work each day. If any leaks are found, repairs will be performed promptly.

All maintenance and repair activities will be conducted in the staging area.

### **3.2.4 Soil and Sediment Control**

No contaminated soil is known or suspected at the site.

Protective coverings (“mud mats”) will be utilized as needed to protect soils and vegetation from damage caused by heavy equipment tracking. If soil moisture content is too high and soil structure is unable to adequately support equipment traffic without significant damage to the soil and vegetation, specific areas will be covered and/or equipment traffic will be re-routed to more stable soils.

All work will be conducted when the stormwater ditch is dry (when no natural flow is occurring, or when flow is diverted around the job site). Incidental accumulation of turbid water inside the work area may be routed to an upland area above the limits of anticipated floodwater to remove fine sediment and other contaminants. However, all other flow must be returned to the ditch immediately downstream of the project area. See Section 3.2.7 for more information regarding stream bypass procedures.

### **3.2.5 Soil and Vegetation Repair**

Upon completion of the project all soils will be stabilized by application of effective BMPs. Applicable BMPs include but are not limited to: temporary and permanent seeding, sodding, mulching, erosion control fabrics, and matting.



Disturbed areas surrounding the pipe crossing will be restored to the pre-existing elevations. Disturbed vegetation will be re-established using a seed mix.

Excavation backfill will utilize as much native soil as possible while maintaining required structural integrity. Backfill placed on top of the new mats will utilize native soils in all areas that will not compromise structural integrity.

### **3.2.6 Stormwater**

If needed, based on the weather forecast, exposed and unworked soils will be stabilized by application of effective best management practices (BMPs) that prevent erosion. BMPs that may be applied to protect stormwater quality include:

- Preserve natural vegetation
- Install high visibility fence to prevent unnecessary access to sensitive areas
- Install straw wattles to capture sediment
- Protect exposed slopes (mulching, wattles, tarps, etc.)
- Cover stockpiles when rain is forecasted
- Silt fence

If flow or precipitation conditions arise that will result in erosion or siltation of waters of the state, project activities will stop except those needed to control erosion and siltation.

Upon completion of the project all soils will be stabilized by application of effective BMPs. Applicable BMPs include, but are not limited to: temporary and permanent seeding, sodding, mulching, erosion control fabrics, and matting.

### **3.2.7 Timing**

Work will be completed during the dry the season when there is minimal water flowing in the watercourse. If water is encountered during field activities, work will be postponed until no natural flow is occurring in the channel or the flow will be diverted around the job site, see details in Section 3.2.6. All field activities will be conducted between August 1 and September 30.

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### **3.2.8 Stream Bypass and Excavation De-watering**

Bypass methods may include re-routing the water flow through a temporary channel, a temporary pipe, or a pumped diversion. The least-impacting feasible method to temporarily bypass water from the work area will be used. The physical characteristics of the site and the anticipated volume of water flowing through the work area will be considered when selecting the bypass method. The selected bypass method will be submitted to Trans Mountain and to Swinomish Department of Environmental Protection for review.

During all phases of bypass installation and decommissioning, flows will be maintained downstream of the project site. Diverted water must be returned to the channel downstream of the work area. Flow energy will be dissipated from the diversion to prevent scour or erosion of the channel and bank.

If the bypass is a pumped diversion, once started it must run continuously until it is no longer necessary to bypass flows. This requires back-up pumps on-site and twenty-four-hour monitoring for overnight operation.

If water accumulating inside the bypassed excavation area must be removed, it will be diverted to an area where water can infiltrate into the ground, and excess water that does not infiltrate will flow through a vegetated filter strip for treatment prior to re-entering the drainage ditch. Dewatering water shall not be allowed to violate water quality standards.

### **3.2.9 Pipeline Protection**

Trans Mountain Pipeline safety protocols, including the Proximity Permit Design and Construction Guidelines, will be followed at all times. A Trans Mountain representative will be onsite while working near the pipeline.

## **3.3 LONG-TERM PROJECT BENEFITS**

The new protective concrete mat will have the following beneficial impacts:

- Prevent erosion in the area.
- Protect pipeline integrity.

## **4.0 MONITORING PROGRAM**

The following strategies will be used to monitor for any potential adverse impacts during the project. Environmental monitoring personnel will be onsite or on-call during all field work activities, and will record observations in a dedicated field notebook. The results of all environmental monitoring will be communicated to the Construction Manager and the Project Manager in a timely manner.

### **4.1 HEAVY EQUIPMENT**

Machinery operators are responsible for all equipment maintenance, including pre-work inspections each day to ensure there are no leaks or drips that could introduce contaminants into the environment. If any leaks are discovered, they will be immediately contained and the equipment will be repaired prior to use. All maintenance activities will be completed in the staging area (see Section 3.2.1).

### **4.2 SOILS AND SEDIMENT**

Onsite environmental monitoring personnel will visually inspect work areas daily to identify any exposed soils with the potential to cause siltation of waters of the state. Personnel will also identify any soils which have been exposed and unworked for more than 7 days.

Soils and sediment in all work areas will be visually monitored for signs of chemical contamination. Sources of contamination may include leaks from vehicles, equipment, and chemical storage areas. Any contamination will be contained and evaluated for appropriate disposal offsite if needed.

### **4.3 WATER QUALITY**

Water is not anticipated to be present in the work area during field activities. If water flow is present, environmental monitoring personnel will conduct monitoring both upstream and downstream of the work area at least daily when water is present. Water

will be examined visually for the presence of turbidity, oil sheen, suspended sediment, and discoloration.

Turbidity – Turbidity will be measured using a Hach portable turbidity meter, and will be reported in Nephelometric Turbidity Units (NTUs).

- Downstream turbidity will be maintained at no more than 5 NTUs over background (upstream) turbidity when the background turbidity is 50 NTUs or less, or no more than a 10% increase in turbidity when the background (upstream) turbidity is more than 50 NTUs.

If the applicable NTU goal is exceeded during the project, a site inspection will be completed to determine the source of turbidity and evaluate the effectiveness of all BMPs being implemented at the work site. Document BMP implementation and maintenance in the site field notebook.

Oil Sheen – If any visible oil sheen is observed on water discharging from the work area, a site inspection will be completed to determine the source and evaluate the effectiveness of all BMPs being implemented at the work site. Oil absorbent booms will be installed to capture the sheen. The source of the sheen will be controlled and/or removed as quickly as possible.

Suspended Sediment - If an elevated level of suspended sediment is observed in water discharging from the work area, a site inspection will be completed to determine the source and evaluate the effectiveness of all BMPs being implemented at the work site.

Discoloration - If discoloration is observed in water discharging from the work area, a site inspection will be completed to determine the source and evaluate the effectiveness of all BMPs being implemented at the work site.

## 5.0 NOTIFICATION PROCEDURES

The following notifications shall be adhered to during all construction-related activities.

INSERT ADDITIONAL NOTIFICATION REQUIREMENTS AS NEEDED

### Pre- and Post-Construction Notification:

*USACE, Seattle District Office (JARPA notification submitted)* 1-206-764-3495

*Tribal Historic Preservation Officer* 1-360-466-7280

### Stream Bypass Notifications:

Prior to using any pumped stream bypass the selected bypass method will be submitted to the following for review:

*Dan Chow, Trans Mountain* 1-604-268-3008

*Scott Andrews, Swinomish Dept. of Env. Protection* 1-360-466-7299

### Spills to State Waters:

If oils or hazardous substances are spilled to state waters the Project Manager will immediately call ALL of the following:

*Washington Department of Emergency Management* 1-800-258-5990

*U.S. Coast Guard National Response Center* 1-800-424-8802

*Jim Sande, Swinomish Emergency Management Coordinator* 1-360-661-2384

*Kevin Anderson, Swinomish Spill Response* 1-360-630-1532

### Notifications to Trans Mountain:

If any of the above notifications are required, immediately notify the Trans Mountain Project Manager:

*Dan Chow, Trans Mountain* 1-604-268-3008 (direct)  
1-604-209-1351 (cell)



## **6.0 IMPLEMENTATION SCHEDULE**

All field activities will be completed between August 1 and September 30, 2019.  
See details in Section 5 for Notification Procedures schedule.

## **7.0 PLAN CERTIFICATION AND ACCEPTANCE**

The following persons acknowledge and accept the roles and responsibilities as described by this Environmental Protection Plan.

Signature: \_\_\_\_\_

Dan Chow  
Trans Mountain Pipeline (Puget Sound) LLC  
Project Manager

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

Dan Heimbigner  
Whatcom Environmental Services  
Environmental Contractor

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

Patrick Flanagan  
Indicator Engineering  
Engineering Contractor

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

INSERT CONTRACTOR NAME  
XXX Construction  
Construction Contractor

Date: \_\_\_\_\_



## **APPENDIX A**

INSERT Permit Approval

## **APPENDIX B**

INSERT Permit Approval

## **APPENDIX C**

Environmental Orientation Record (sign-in sheet)

## **ATTACHMENT H**

ESA Species Evaluation

April 15, 2019

Mr. Ron Wilcox  
Seattle District Regulatory Branch  
U.S. Army Corps of Engineers  
P.O. Box 3755  
Seattle, WA, 98124-3755

**RE: ESA Species and Critical Habitat Evaluation – Trans Mountain Pipeline  
Swinomish Ditch Crossing Remediation**

Mr. Wilcox:

This evaluation has been completed in conjunction with the Joint Aquatic Resource Permit Application for the Swinomish Crossing Ditch Remediation Project. The project proponent is Trans Mountain Pipeline (Puget Sound) LLC. This evaluation included a review of the US Fish and Wildlife official species list, NOAA Fisheries West Coast Region Critical habitat maps, and discussions with USFWS biologists.

Based upon a review of available information there will be no adverse impacts to listed species or critical habitats. No listed threatened or endangered species are expected to be encountered during this project. There will be no take of any listed threatened or endangered species. The Swinomish Channel is the nearest identified critical habitat. Sediment control BMPs will be used to prevent sedimentation of the Channel, and water quality monitoring will be used to ensure BMPs are functioning adequately. A review of each species and habitat evaluated is provided below.

**Site Description**

The site is approximately 1000 feet south of SR20 and 180 feet west of Swinomish Slough. The property is undeveloped with no structures onsite. Work will be conducted within the existing Trans Mountain Oil Pipeline right-of-way easement which runs

through Parcel P20270, located in Skagit County, Washington, and owned by the Swinomish Tribal Community (U.S. Government Holding). The easement includes a strip of land fifty feet in width running thirty feet on the north side and twenty feet on the south side of the buried pipeline.

The site is generally flat, with open fields containing wetland and one stormwater drainage ditch. The drainage ditch runs north to south at the interface of the eastern edge of a wetland located on the project site and the toe of the Swinomish Channel levee. The wetland located on the project site is designated as a Swinomish Tribe Class 2 wetland (Swinomish Tribal Code 19-04.410). The wetland is also designated as a depressional wetland according to the 2014 Ecology Wetland Rating System.

Water draining from the project site flows south in the ditch along the toe of the levee, passing through two culverts before draining into the Fornsby Slough network approximately 1,300 feet south of the project site. The final culvert emptying the ditch into Fornsby slough is an 18 inch culvert with a backflow preventing tide gate. The tide gate blocks Fornsby Slough from back-flowing into the drainage ditch during high tides. Fornsby slough exchanges water with the Swinomish Channel. Additional site conditions including a hydraulic analysis of flows in the drainage ditch as well as photos of site and tide gate can be found in the attached Letter Brief prepared by Indicator Engineering dated April 6, 2018.

Slopes on the site and surrounding area are generally up to 2%; however, the levee east of and adjacent to the drainage ditch contains relatively steep banks with slopes up to 25%. There are no areas of visible soil erosion on banks within the stormwater drainage ditch. There are no indications of unstable soils on the remainder of the site.

Soils on the site are generally the Tacoma silt loam (<https://websoilsurvey.sc.egov.usda.gov>. Accessed March 8, 2019). The typical profile of Tacoma silt loam is:

0 to 10 inches: silt loam

10 to 50 inches: silt loam

50 to 60 inches: silt loam



### Possible Impacts and Mitigation

Possible impacts of the project have been identified and include sedimentation of downstream waters, terrestrial noise, and aquatic noise. An evaluation of the source of potential impacts, mitigation approaches, and results is presented below. Through the application of mitigation approaches described below, all adverse impacts to listed species and critical habitat are expected to be discountable.

Possible Impact	Mitigation Approach
Sedimentation of downstream waters	<p><u>Source of impact:</u></p> <p>Sedimentation of downstream waters could occur during excavation activities required to install the protective concrete mat. Excavation will occur in the drainage ditch and wetland area. Sediment may be carried offsite if there is water flowing in the ditch or if rainfall occurs.</p> <p><u>Mitigation approach:</u></p> <ul style="list-style-type: none"> <li>• Earth disturbing work will only be conducted after de-watering of the excavation area.</li> <li>• Turbid de-watering water will be directed to an appropriate treatment train including (in order of application) infiltration, settling, vegetative filter.</li> <li>• Any water flowing in the ditch, if present, will be diverted around project and returned downstream.</li> <li>• Appropriate stormwater BMPs will be implemented including silt fence, straw wattles, cover stockpiles as needed, daily site inspection, stabilize all disturbed soils, re-vegetate all areas.</li> <li>• Downstream water quality will be monitored to ensure turbid water does not enter either downstream waterbody (Fornsby Slough and Swinomish Channel) per the Environmental Protection Plan (included as JARPA Attachment G.</li> </ul>

Sedimentation of downstream waters	<p><u>Results:</u></p> <p>Adverse impacts will be prevented through the effective management of turbid water.</p>
Terrestrial Noise	<p><u>Source of impact:</u></p> <p>Terrestrial noise is inherent with the use of construction equipment. Impacts will be limited to the duration of the project construction activities.</p> <p><u>Mitigation approach</u></p> <p>Minimal mitigation needed. Standard vehicle and equipment exhaust mufflers will be utilized.</p> <p><u>Results:</u></p> <p>Adverse impacts are not expected since the likelihood of encountering ESA species during project is discountable. See ESA species discussion below.</p>
Aquatic Noise	<p><u>Source of impact:</u></p> <p>Not applicable – project does not include pile driving; excavation area will be de-watered prior to working.</p> <p><u>Mitigation approach</u></p> <p>No pile driving; excavation area will be de-watered prior to working; work area is physically separated from nearest waterbody (Swinomish Channel) by 180 foot wide earthen berm.</p> <p><u>Results:</u></p> <p>No adverse impact caused by aquatic noise is expected.</p>

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**U.S. Fish & Wildlife Species List Evaluation**

An official list of threatened and endangered species that may occur in the proposed project location and/or may be affected by the proposed project was requested from the U.S. Fish & Wildlife Service. The list was received March 27, 2019 and included eight threatened, endangered, or candidate species. Species are described below. The official species list is included as JARPA Attachment I

**Mammals:**

- Gray Wolf
- North American Wolverine

**Birds**

- Marbled Murrelet
- Streaked Horned Lark
- Yellow-billed Cuckoo

**Fish**

- Bull Trout
- Dolly Varden

**Plants**

- Golden Paintbrush

**Critical Habitats**

- No critical habitats under Fish and Wildlife jurisdiction are present

*Mammals*Gray Wolf (proposed endangered)

This project will have no effect on gray wolves. The species has an insignificant likelihood of occurrence at the project site and is not expected to be encountered. Populations are extensively monitored in western Washington by the Washington Department of Fish and Wildlife and none occur in the project area. While populations do occur in Skagit county, the closest designated species occurrence area identified by the USFWS Environmental Conservation Online System (ECOS) is approximately 15 miles east of the project site. No critical habitat has been designated for this species.

Source: USFWS online

(<https://ecos.fws.gov/ecp0/profile/speciesProfile?spcode=A00D>).

North American Wolverine (proposed threatened)

The project will have no effect on the North American wolverine. The species has an insignificant likelihood of occurrence at the project site and is not expected to be encountered. Wolverines prefer habitats that are cold and reliably maintain deep persistent snow late into the warm season. The project site lies in a maritime climate and does not maintain snow for any extended periods. No critical habitat has been designated for the North American Wolverine

Source: USFWS online (<https://ecos.fws.gov/ecp0/profile/speciesProfile?spcode=A0FA>).

*Birds*Marbled Murrelet (threatened)

The project will have no effect on marbled murrelet. The species has an insignificant likelihood of occurrence at the project site and is not expected to be encountered. While the project site is within the designated species occurrence area identified by ECOS, the project site does not contain typical murrelet habitat. Marbled murrelet typically nest in old-growth forest stands near the coast, and forage in marine areas and inland freshwater lakes. The site does not encompass murrelet nesting (old-growth) or inland lake foraging habitats. The project site is characterized by a grassy field bordered by scattered shrubs and scattered trees. The project site is approximately 180 feet away from nearest marine habitat, however according to discussion with USFWS biologist Lindsay Asman the likelihood of terrestrial noise from the project disturbing marbled murrelet in the Swinomish Channel area is discountable. The nearest critical habitat published for the murrelet is approximately 25 miles east of the project site.

Source: USFWS online

(<https://ecos.fws.gov/ecp0/profile/speciesProfile?spcode=B08C>); USFWS Biological Opinion 01EWF00-2017-F-0826, and 4-16-2019 phone conversation with Lindsay Asman (USFWS).

Streaked Horned Lark (threatened)

The project will have no effect on streaked horned lark. The species has an insignificant likelihood of occurrence at the project site and is not expected to be encountered. While the project site does lie within the species occurrence area identified on ECOS, the likelihood of occurrence is insignificant since the project site does not

contain lark habitat. The streaked horned lark inhabits open country with very short or no vegetation, including bare agricultural fields and some airports. The project site is characterized by a tall grassy field and wetland with shrubs bordering a treed area. The only open/bare ground at the project site is gravel access roads. The nearest critical habitat published for the lark is approximately 130 miles southwest of the project site. According to the publication “Streaked Horned Lark Habitat Characteristics” (Anderson and Pearson, 2015) the current geographic range for streak horned lark in Washington does not extend north of the Seattle.

Source: USFWS online

(<https://ecos.fws.gov/ecp0/profile/speciesProfile?spcode=B0B3>); Anderson and Pearson, 2015; and 4-9-2017 phone conversation with Kim Flotlin (USFWS).

#### Yellow-billed Cuckoo (threatened)

The project will have no effect on the yellow-billed cuckoo. The species has an insignificant likelihood of occurrence at the project site and is not expected to be encountered. While the project site does lie within the yellow-billed cuckoo species occurrence area identified by ECOS, the species is very rare in Washington state. According to discussion with USFWS biologist Emily Teachout, projects lasting less than one season in Washington are extremely unlikely to encounter any cuckoos and have a discountable chance of exposure. The nearest published critical habitat is in California.

Source: USFWS online

(<https://ecos.fws.gov/ecp0/profile/speciesProfile?spcode=B06R>), USFWs cited references, phone conversation on 4-9-2017 with Emily Teachout (USFWS),

#### Bull Trout (threatened)

The project will have no effect on bull trout. The species has an insignificant likelihood of occurrence at the project site and is not expected to be encountered. While the project site does lie within the bull trout species occurrence area identified by ECOS, USFWS biologist Jeff Chan does not expect bull trout to be present in the drainage ditch in which the proposed action is occurring. Mr. Chan indicated the nearest potential bull trout would be adults and sub-adults in the Swinomish Channel, and that the ditch where the proposed action would occur is too small to provide suitable habitat for such fish.

Additionally, the ditch where the proposed action will occur is physically isolated by the presence of a backflow preventing tide gate installed on the 18-inch culvert located approximately 1,300 feet south of the project site. This culvert is where the drainage ditch discharges into the Fornsby Slough, which exchanges water with the Swinomish Channel.

The nearest critical habitat published for the bull trout is Swinomish Channel. All work will be physically separated from the critical habitat (Swinomish Channel) by means of the 180 foot earthen berm, however the work area is hydraulically connected to the Channel approximately 1,300 feet downstream of the project location. If any water is encountered in the project excavation area, all water flow will be bypassed around the excavation and the work area will be dewatered. Standard sediment control BMPs will be used and water discharged from the site will be monitored to ensure the project does not discharge turbid water to the critical habitat. Dewatering protocols and BMPs are provided in the Environmental Protection Plan (attached to JARPA). The discharge of suspended solids into the Swinomish Channel is anticipated to be discountable.

Additionally, all work will be completed within the approved bull trout work window for marine/estuarine areas (July 16- February 15). Project adverse impacts to the critical habitat are discountable.

Source: USFWS online (<https://ecos.fws.gov/ecp0/profile/speciesProfile?spcode=E065>), and 4-15-2019 phone conversation with Jeff Chan (USFWS), April 16, 2018 Letter Brief prepared by Indicator Engineering.

Dolly Varden (proposed similarity of appearance; threatened)

The project will have no effect on Dolly Varden. The species has an insignificant likelihood of occurrence at the project site and is not expected to be encountered. While the project site does lie within the published dolly Varden species occurrence area identified by ECOS, USFWS Biologist Jeff Chan indicated that in Skagit County Dolly Varden are normally found in the headwaters of larger river systems (such as the Skagit River) and would not be present in the waters in which the proposed action is occurring.

No critical habitat has been designated for Dolly Varden.

Source: USFWS online (<https://ecos.fws.gov/ecp0/profile/speciesProfile?spcode=E09Z>), and 4-15-2019 phone conversation with Jeff Chan (USFWS).



Golden Paintbrush (threatened)

The project will have no effect on golden paintbrush. The species has an insignificant likelihood of occurrence at the project site and is not expected to be encountered. USFWS Biologist Jeff Chan indicated that golden paintbrush in western Skagit County are well mapped and none are present in the location of the proposed action.

There is no critical habitat published for the golden paintbrush.

Source: USFWS online

(<https://ecos.fws.gov/ecp0/profile/speciesProfile?spcode=Q26U>), and 4-15-2019 phone conversation with Jeff Chan (USFWS).

*Critical Habitats*

There are no critical habitats under Fish and Wildlife jurisdiction at the project site. It should be noted that the Swinomish Channel is identified as Critical Habitat for bull trout. Project adverse impacts to bull trout critical habitat are discountable, see discussion above in the bull trout section.

**NOAA Critical Habitat**

Critical habitat maps from NOAA Fisheries West Coast Region were reviewed for proximity of the project site to Endangered Species Act Critical Habitat. Species habitats reviewed include Southern Resident killer whale, North Pacific right whale, Stellar sea lions, Chinook salmon (numerous ESUs), Chum salmon (numerous ESUs), Coho salmon (numerous ESUs), Sockeye salmon (numerous ESUs), Steelhead (numerous ESUs), Black Abalone, Eulachon, Rockfish, Green Sturgeon, and Leatherback sea turtles. The nearest identified critical habitat is Puget Sound chinook habitat in the Swinomish Channel. No other ESA critical habitat is present near the project site.

*Puget Sound Chinook Critical Habitat*

The Swinomish Channel is identified by NOAA as critical habitat for Puget Sound Chinook. All work will be physically separated from the critical habitat (Swinomish Channel) by means of the 180 foot wide earthen berm, however the work area is hydraulically connected to the Channel approximately 1,300 feet downstream of the

project location. If any water is encountered in the project excavation area, all water flow will be bypassed around the excavation and the work area will be dewatered. Standard sediment control BMPs will be used and water discharged from the site will be monitored to ensure the project does not discharge turbid water into the critical habitat. Dewatering protocols and BMPs are provided in the Environmental Protection Plan (included as JARPA Attachment G).

Additionally, all work will be completed within the approved Salmon work window for marine/estuarine areas (July 2- March 2). Project adverse impacts to Puget Sound Chinook critical habitat are discountable.

### **Conclusion**

The project has been designed to ensure adverse impacts to species are insignificant by using a combination of fish work windows, physical separation from species habitat, and appropriate best management practices to prevent water pollution. No ESA species or Critical Habitat are expected to be adversely affected by the proposed work.

Sincerely,

A handwritten signature in black ink, appearing to read 'Dan Heimbigner', is positioned above the printed name.

Dan Heimbigner  
Whatcom Environmental Services

## **ATTACHMENT I**

IPaC Species List



## United States Department of the Interior

### FISH AND WILDLIFE SERVICE

Washington Fish And Wildlife Office

510 Desmond Drive Se, Suite 102

Lacey, WA 98503-1263

Phone: (360) 753-9440 Fax: (360) 753-9405

<http://www.fws.gov/wafwo/>



In Reply Refer To:

March 27, 2019

Consultation Code: 01EWF00-2019-SLI-0748

Event Code: 01EWF00-2019-E-01543

Project Name: Swinomish Ditch Crossing Remediation

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

#### To Whom It May Concern:

The enclosed species list identifies threatened, endangered, and proposed species, designated and proposed critical habitat, and candidate species that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. The species list is currently compiled at the county level. Additional information is available from the Washington Department of Fish and Wildlife, Priority Habitats and Species website: <http://wdfw.wa.gov/mapping/phs/> or at our office website: [http://www.fws.gov/wafwo/species\\_new.html](http://www.fws.gov/wafwo/species_new.html). Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether or not the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species, and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.). You may visit our website at <http://www.fws.gov/pacific/eagle/for> information on disturbance or take of the species and information on how to get a permit and what current guidelines and regulations are. Some projects affecting these species may require development of an eagle conservation plan: ([http://www.fws.gov/windenergy/eagle\\_guidance.html](http://www.fws.gov/windenergy/eagle_guidance.html)). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Also be aware that all marine mammals are protected under the Marine Mammal Protection Act (MMPA). The MMPA prohibits, with certain exceptions, the "take" of marine mammals in U.S. waters and by U.S. citizens on the high seas. The importation of marine mammals and marine mammal products into the U.S. is also prohibited. More information can be found on the MMPA website: <http://www.nmfs.noaa.gov/pr/laws/mmpa/>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Related website:

National Marine Fisheries Service: [http://www.nwr.noaa.gov/protected\\_species/species\\_list/species\\_lists.html](http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html)

Attachment(s):

- Official Species List
-

# Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

**Washington Fish And Wildlife Office**

510 Desmond Drive Se, Suite 102

Lacey, WA 98503-1263

(360) 753-9440

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## Project Summary

Consultation Code: 01EWF00-2019-SLI-0748

Event Code: 01EWF00-2019-E-01543

Project Name: Swinomish Ditch Crossing Remediation

Project Type: \*\* OTHER \*\*

Project Description: Installation of two flexible concrete mats (8x20 ft each) over an existing pipeline on an easement running through the Swinomish Reservation agricultural lands area, to provide cover and protection in a drainage ditch. Work to be completed in August.

### Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/48.452530604056626N122.51704021524989W>



Counties: Skagit, WA

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## Endangered Species Act Species

There is a total of 8 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries<sup>1</sup>, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

- 
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

## Mammals

NAME	STATUS
<b>Gray Wolf <i>Canis lupus</i></b> Population: Western Distinct Population Segment No critical habitat has been designated for this species.	Proposed Endangered
<b>North American Wolverine <i>Gulo gulo luscus</i></b> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/5123">https://ecos.fws.gov/ecp/species/5123</a>	Proposed Threatened

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## Birds

NAME	STATUS
<b>Marbled Murrelet</b> <i>Brachyramphus marmoratus</i> Population: U.S.A. (CA, OR, WA) There is <b>final</b> critical habitat for this species. Your location is outside the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/4467">https://ecos.fws.gov/ecp/species/4467</a>	Threatened
<b>Streaked Horned Lark</b> <i>Eremophila alpestris strigata</i> There is <b>final</b> critical habitat for this species. Your location is outside the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/7268">https://ecos.fws.gov/ecp/species/7268</a>	Threatened
<b>Yellow-billed Cuckoo</b> <i>Coccyzus americanus</i> Population: Western U.S. DPS There is <b>proposed</b> critical habitat for this species. Your location is outside the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/3911">https://ecos.fws.gov/ecp/species/3911</a>	Threatened

## Fishes

NAME	STATUS
<b>Bull Trout</b> <i>Salvelinus confluentus</i> Population: U.S.A., conterminous, lower 48 states There is <b>final</b> critical habitat for this species. Your location is outside the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/8212">https://ecos.fws.gov/ecp/species/8212</a>	Threatened
<b>Dolly Varden</b> <i>Salvelinus malma</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/1008">https://ecos.fws.gov/ecp/species/1008</a>	Proposed Similarity of Appearance (Threatened)

## Flowering Plants

NAME	STATUS
<b>Golden Paintbrush</b> <i>Castilleja levisecta</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/7706">https://ecos.fws.gov/ecp/species/7706</a>	Threatened

## Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

## **ATTACHMENT J**

Pipeline Easement Documentation

2/2/90  
2/3/90  
R/W No. 372/614

9007110049

RIGHT-OF-WAY EASEMENT - TRANS MOUNTAIN

The Right-of-Way Easement is between the United States of America (the "United States") with the consent of the Swinomish Tribal Community ("the Tribe") and Trans Mountain Oil Pipe Line Corporation, a Delaware corporation registered as a foreign corporation in the State of Washington ("Trans Mountain").

R E C I T A L S

A. Trans Mountain, the Tribe, and the United States have been engaged in a dispute concerning whether the existing pipeline of Trans Mountain passes through lands forming part of the Swinomish Indian Reservation and held in trust by the United States for the benefit of the Tribe, without appropriate permission or easements having been granted to Trans Mountain.

B. The dispute between the parties to this easement has taken the form of two actions: Trans Mountain Oil Pipe Line Corporation, et al. v. Swinomish Tribal Community, et al., Western District of Washington cause C76-550V, and United States of America v. Trans Mountain Oil Pipe Line Corporation, Western District of Washington cause C77-117V (the "Actions").

C. Trans Mountain, the Tribe, and the United States have now settled the dispute among them, pursuant to the Settlement Agreement, dated 2/7/90 (the "Settlement Agreement"). The Settlement Agreement provides, among other things, for the resolution of the matters in issue in the Actions and Tribal

JERRY MCINTURE  
SKAGIT COUNTY ASSESSOR

'90 JUL 11 P2:28

Bogle & Gates  
601 Union St.  
Seattle WA 98101

9007110049

Call when ready to  
pick up 482-5151

SKAGIT COUNTY WASHINGTON  
Real Estate Excise Tax  
PAID

JUL 11 1990

VOL 913 PAGE 440

Amount Paid \$  
By: Skagit County Treasurer Deputy

consent to the granting of a right-of-way easement to Trans Mountain.

D. This Right-of-Way Easement is intended to grant and convey to Trans Mountain, despite any questions of survey or any uncertainty as to the location of (a) the boundaries of the Swinomish Indian Reservation, and (b) any lands within the Reservation (whether tidelands, submerged lands, or uplands) held in trust by the United States for the benefit of the Tribe, a forty (40) year easement with two consecutive twenty (20) year options to renew over any and all lands comprising part of the Swinomish Indian Reservation and held in trust by the United States for the benefit of the Tribe on, over, under and through which the existing pipeline of Trans Mountain is located.

NOW THEREFORE, in consideration of the sum of \$105,275 and the agreements and covenants contained in the Settlement Agreement, in the Application for this Easement, and in this Easement, the United States with the consent of the Tribe hereby grants and conveys to Trans Mountain, under authority of the Act of February 5, 1948 (62 Stat. 17; 25 U.S.C. 323-328) and the regulations in 25 C.F.R. part 169 promulgated thereunder, a right-of-way easement (the "Easement") as follows:

1. Legal Description: The Easement hereby granted shall be on, over, under and through those lands comprising part of the Swinomish Indian Reservation and held in trust by the United States for the benefit of the Tribe, located in Skagit

County, Washington, described generally in Exhibit "A" hereto and described more particularly as:

(a) A strip of land fifty feet in width, lying between lines parallel to and situate thirty feet on the north side and twenty feet on the south side, measured at right angles from the center line (or tangent thereto if a curve), of the existing Trans Mountain pipeline; and

b) A second strip of land (which in part overlaps the strip described in (a) adjacent to the west bank of Swinomish Slough being approximately two hundred and fifty feet long and approximately forty feet wide within which Trans Mountain constructed a bulkhead to protect the bank and the pipeline (the "existing bulkhead") consisting of piles, timbering, deadmen, anchors, rip-rap, granular and non-granular fill, all pursuant to a Grant of Easement from Ed Knudson, et al., filed for record in the Office of the Auditor of Skagit County, Washington, under Auditor's File No. 512591 and there of record in Volume 268 of Deeds, Page 190.

2. Term: The term of the Easement is forty (40) years from the date hereof unless extended by exercise of one or both of the options or unless abridged by surrender of the Easement as provided hereunder.

Trans Mountain shall have options to extend the Easement for two further periods of twenty (20) years each. In the event Trans Mountain chooses to exercise one or both of the options, it shall give written notice to the United States and



the Tribe no later than thirty (30) days prior to the expiration of the current term and by paying, as partial consideration for each option period, \$52,637.50. In addition, 90 days after commencement of each option term, Trans Mountain shall pay an additional sum equal to the increase above \$52,637.50 resulting from the application to \$52,637.50 of the percentage change in the All Urban, Consumers - All Item Index of the United States Department of Labor, Bureau of Labor Statistics for the Seattle-Tacoma, WA area, or if not available, the most nearly comparable index (the "CPI"), from the month of July, 1987 to the first day of the first month of the option term. Should the Index not be computed for that month, the most recent computation of the index shall be used. Provided, that in no event shall the option payment be less than the amount required by applicable federal law, as amended from time to time.

Trans Mountain shall have the right to surrender the Easement at any time by giving notice to the United States and the Tribe.

In the event that Trans Mountain fails to surrender and vacate the lands covered by this agreement, pursuant to the provisions contained herein, after expiration of either the original term of this right of way or of any extended term, except pursuant to an exercise of an option to extend, Trans Mountain shall pay to the Tribe a monthly rent in an amount equal to \$1000 a month adjusted upward but not downward by the percentage change in the CPI from January 1, 1989 to the date



that the payment is due. The payment shall be due monthly on the last day of every month following the expiration of the preceeding term.

In any proceeding brought by the Tribe to evict Trans Mountain and/or to seek damages for Trans Mountain's failure to surrender, the Tribe shall be entitled to payment for the holdover period in an amount equal to the fair rental value of the right of way so used by Trans Mountain; provided that such fair rental value shall not be less than the monthly payments provided for in the preceding sub-paragraph. Should Trans Mountain refuse or fail to make said monthly payments to the Tribe, the Tribe shall be entitled to apply to any court of competent jurisdiction for injunctive relief to compel such payments.

3. Rights of Trans Mountain: Under the Easement Trans Mountain, its successors and assigns shall have the right:

a) to maintain, operate, inspect, alter, repair, protect, and remove the existing pipeline, and replace or reconstruct the existing pipeline with another pipeline, the diameter and specifications of which may differ (but which shall not exceed 20 inches nominal diameter) from the existing pipeline, for the carriage, conveyance, transportation, storage and handling of oil, gas, and the products or by-products thereof, water, or any other fluid, slurry, or substance that will not unreasonably increase the hazard to surrounding persons or property or unreasonably decrease the value of surrounding

property, together with such drips, valves, fittings, meters and other equipment and appurtenances as may be necessary or convenient to the operation of the pipeline;

b) to erect, repair, maintain, remove and operate rectifiers and anodes and other devices necessary for the control of pipeline corrosion, over, across and through the Easement;

c) to keep the Easement clear of underbrush and trees;

d) to maintain, inspect, alter, protect, repair, replace or remove the existing bulkhead;

e) of ingress and egress to and from the same for the aforesaid purposes; and

f) to an exclusive right-of-way easement across and over the Easement and no other works or facilities may be constructed or installed on said strip, except as provided in paragraph 4.

The United States and the Tribe agree that notwithstanding any rule in law or equity, the pipeline, and bulkhead and all other facilities brought into, laid or erected upon or buried in or under the Easement by Trans Mountain shall at all times remain the property of Trans Mountain notwithstanding that the same may be annexed or affixed to the freehold, and shall at any time and from time to time be removable in whole or in part by Trans Mountain, its successors and assigns, provided however, upon termination or surrender of

the Easement, Trans Mountain may, at its option, leave all or any part of the above-described installations in place in the ground.

4. Activities Permitted With Consent of Trans

Mountain: Subject to the prior written consent of Trans Mountain, such consent not to be unreasonably withheld, and provided the conditions set out below are met, the United States and the Tribe may undertake or permit others to undertake the following:

- a) the construction, operation, repair and maintenance of utilities, streets, roadways or railroad tracks including appropriate landscaping across (as distinguished from running lengthwise along) the Easement;
- b) the placing or altering of any body of water over the Easement; or
- c) any grading, filling or excavating which will increase or reduce the depth of cover over the pipeline.

The above works are subject to the following conditions:

- i) Before undertaking any of the foregoing, the United States and the Tribe will furnish Trans Mountain with such plans, specifications and other particulars as Trans Mountain may reasonably require.
- ii) Trans Mountain shall be given not less than 48 hours notice of any work within the Easement so that it may arrange to have an inspector present to ensure that no damage is done to the pipeline.



iii) In the event that Trans Mountain is obliged to lower, case or otherwise protect the pipeline, the United States and the Tribe will reimburse or cause Trans Mountain to be reimbursed for all reasonable and necessary costs of labor and materials, including the costs Trans Mountain incurs to retain independent contractors.

iv) The United States and the Tribe shall indemnify and hold Trans Mountain harmless from all losses Trans Mountain incurs resulting from damage to the pipeline attributable to the negligence or intentional misconduct of the Tribe or its agents (where such agents are under the control of the Tribe and the activities of the agent are within the course and scope of the agent's employment), including any of the activities described in parts (a) through (c) of this paragraph. The Tribe, unless otherwise agreed by Trans Mountain, shall purchase insurance naming Trans Mountain as an additional insured, in terms that are acceptable to the Tribe and Trans Mountain and in an amount sufficient to indemnify and hold Trans Mountain harmless from losses and liabilities Trans Mountain may incur resulting from damage to the pipeline attributable to the negligence or intentional misconduct of the Tribe or its agents (where such agents are under the control of the Tribe and the activities of the agent are within the course and scope of the agent's employment) while undertaking any of the activities this paragraph 4 authorizes. Terms shall include among others, the term of the insurance policy and provisions for payment of

insurance premiums which may require unequivocal assurances that the policy will remain in full force and effect for the entire period of construction or other undertaking and which could provide for payment of all premiums in full prior to commencing the undertaking.

In the event the Tribe and Trans Mountain cannot agree on the adequacy of insurance coverage, including the limits of insurance, the perils insured against, and the language of the applicable policy or policies, that issue will be submitted to the American Arbitration Association, for its determination of what, in conformance with this Agreement and the prevailing level and character of insurance coverage customarily required in the oil pipe line industry, would constitute adequate insurance coverage under the circumstances; providing, however, that the parties intend that insurance containing an exclusion precluding coverage for environmental harm shall not, under any circumstances, constitute adequate insurance. The decision of the American Arbitration Association shall be binding on the parties and judgement may be enforced thereon in any court having jurisdiction.

For purposes of this paragraph, "losses and liabilities Trans Mountain may incur" or "losses Trans Mountain incurs" shall not include damages for loss of product, loss of revenue due to interruption of pipeline use, or claims of third-parties for damages arising out of Trans Mountain's failure or inability to comply with contractual or other obligations to provide product

through the pipeline or any other pipeline service, but shall include all monies Trans Mountain is obligated to expend for pipeline repair, or is obligated to expend or reimburse others as a result of escapement of any of the commodity then being transported through the pipeline.

Where the work is undertaken by a third party, with the approval of the United States and the Tribe, Trans Mountain shall relieve the United States and the Tribe of their indemnity obligation as it applies to such work, provided the third party furnishes Trans Mountain with an indemnity agreement supported by such bond, insurance or other security that Trans Mountain may deem necessary.

The Tribe's agreements to indemnify Trans Mountain and to waive its sovereign immunity are limited to the circumstances set out in this Easement and are to be strictly construed.

5. Relocation of Pipeline: Upon the request of the United States or the Tribe, Trans Mountain will relocate the pipeline provided the United States or the Tribe provides or secured for Trans Mountain an alternate, feasible right-of-way with all necessary permits that give Trans Mountain all of the rights it enjoys under its existing right-of-way easements, including the Easement, at no additional cost to Trans Mountain and provided further that the United States or the Tribe will pay Trans Mountain for all costs directly or indirectly associated with the relocation, including any loss of revenue.



The United States and the Tribe acknowledge that there may be conflicting claims to ownership of certain of the lands which are covered by the Easement. Should it appear to Trans Mountain, acting reasonably, that a third party or parties claim ownership over all or any portion of the lands involved in the proposed relocation, Trans Mountain may so advise the United States and the Tribe in which event Trans Mountain will not be obliged to proceed with such relocation until the United States and the Tribe have obtained the required easement or consent of such third party or parties.

6. Liability of Trans Mountain: Trans Mountain will protect, indemnify and hold harmless the United States and the Tribe against any loss, damage or expense that may be incurred, suffered or had by either of them, resulting from the death or injury to any person or persons or any loss, damage or injury to property, from any intentional or negligent acts or omissions of Trans Mountain, its agents, servants or employees.

7. Assignment: Trans Mountain shall have the absolute right to assign the Easement and all rights, privileges and benefits accruing hereunder, subject always to the terms hereof.

8. Notices: Any notice to be given pursuant to the Easement may be delivered or sent by certified mail, return receipt requested to:

SWINOMISH TRIBAL COMMUNITY:  
Tribal Attorney  
Swinomish Tribal Community  
950 Moorage Way  
P.O. Box 817  
LaConner, Washington 98257



UNITED STATES OF AMERICA:  
Department of Interior  
Bureau of Indian Affairs  
Puget Sound Agency  
Federal Building  
Everett, Washington 98201

TRANS MOUNTAIN OIL PIPE LINE CORPORATION  
Trans Mountain Oil Pipe Line Corporation  
Suite 800 - 601 West Broadway  
Vancouver, British Columbia  
V5Z 4C5

or to such other address as any party may respectively from time  
to time appoint in writing, and any such notice, if mailed, shall  
be deemed to be given to and received by the addressee on the  
date of the return receipt.

DATED this 7 day of February, 1990.

UNITED STATES OF AMERICA

William A. Black  
William A. Black, Superintendent

TRANS MOUNTAIN OIL PIPE LINE  
CORPORATION

By: R. Blakes  
Its: PRESIDENT AND CHIEF EXECUTIVE OFFICER SECRETARY

The Swinomish Tribal Community  
hereby consents to the foregoing  
Right-of-Way Easement this 7th day of  
February, 1990.

SWINOMISH TRIBAL COMMUNITY

By: Robert J. S.  
Its: Chairman

STATE OF WASHINGTON )

COUNTY OF Snohomish )

SS.

On this 7<sup>th</sup> day of February, 1990,  
before me personally appeared WILLIAM A. BLACK, of  
the UNITED STATES OF AMERICA DEPARTMENT OF THE INTERIOR, BUREAU  
OF INDIAN AFFAIRS, to me known to be the individual who executed  
this within instrument and acknowledged that he signed the same  
as his free and voluntary act and deed for the uses and purposes  
herein mentioned.

IN WITNESS WHEREOF I have hereunto set my hand and  
affixed by official seal the day and year first above written.

Patricia D. Ruhl

NOTARY PUBLIC in and for the State  
of Washington, residing at Cuvret

My commission expires Jan 11, 1994

STATE OF WASHINGTON )

COUNTY OF Skagit )

SS.

On this 7<sup>th</sup> day of February, 1990,  
before me personally appeared Robert Mc. Sbr., to  
me known to be the Chairman of the SWINOMISH  
TRIBAL COMMUNITY that executed this within and foregoing  
instrument, and acknowledged said instrument to be the free and  
voluntary act and deed of said corporation, for the uses and  
purposes therein mentioned, and on oath stated that he was  
authorized to execute said instrument.

IN WITNESS WHEREOF I have hereunto set my hand and  
affixed by official seal the day and year first above written.

Darla J. Crookshank

NOTARY PUBLIC in and for the State  
of Washington, residing at Skagit


My commission expires 6/93

[SEAL]

PROVINCE OF )  
 )  
BRITISH COLUMBIA ) ss.

On this 1st day of June, 1989, before me personally appeared Richard B. Stokes and Glenn A. Irving, to me known to be the President and Chief Executive Officer and Secretary, respectively, of TRANS MOUNTAIN OIL PIPE LINE CORPORATION, the corporation that executed this within and foregoing instrument, and acknowledged said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein mentioned, and on oath stated that they were authorized to execute said instrument and that seal affixed is the corporate seal of said corporation.

IN WITNESS WHEREOF I have hereunto set my hand and affixed by official seal the day and year first above written.

  
NOTARY PUBLIC, in and for the  
Province of British Columbia  
Residing at White Rock, B.C.

My commission expires Dec 13, 1989

[SEAL]



RA-931

MS 16-0.94  
SWINOMISH SLOUGH

EXHIBIT A

SWINOMISH

ASW-134

MILE 0.887  
ELEV 18.74

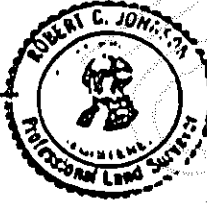
GOV'T. LOT  
SEC. 11-34

DECLARATION

I HEREBY DECLARE THAT THIS MAP WAS PREPARED UNDER MY SUPERVISION;  
THAT THE PIPELINE AS SHOWN WAS LOCATED ON THE GROUND; AND THAT  
THIS MAP ACCURATELY DEPICTS THE RELATIONSHIP OF THE PIPELINE TO  
EXISTING PHYSICAL FEATURES SUCH AS FENCES, ROADS & WATER  
COURSES ETC.

SIGNED: *Robert C. Johnson*  
ROBERT C. JOHNSON  
WASH. STATE L.S. 10392

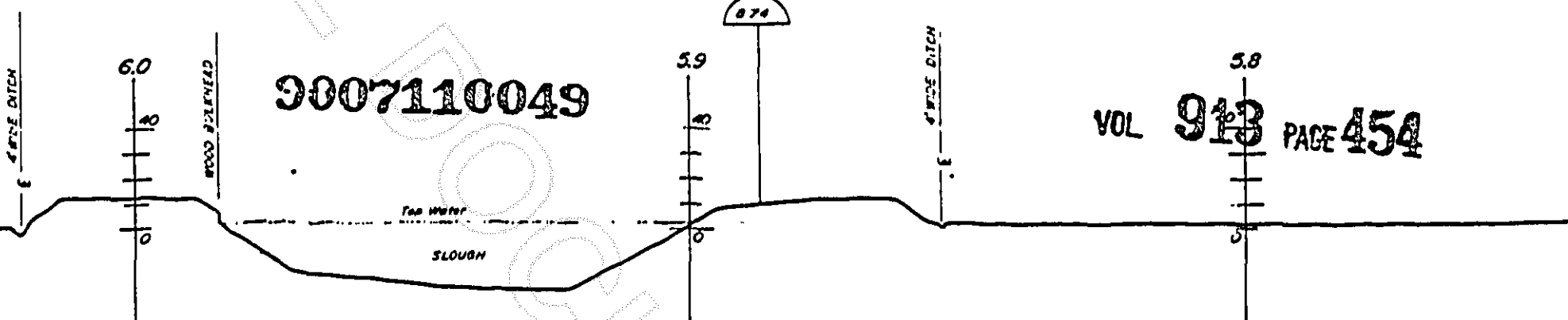
DATE: 4/1/89



NOTE: PORTION OF MAP PREPARED FOR TRANS MOUNTAIN OIL PIPE LINE  
CORPORATION MILE 3.417 TO MILE 6.858 BURLINGTON TO  
ANACORTES.  
SCALE: HORIZ. 1"=100'  
VERT. 1"=40'

9007110049

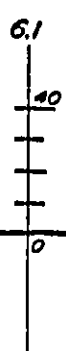
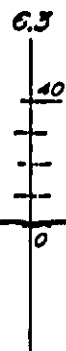
VOL 913 PAGE 454

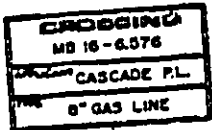
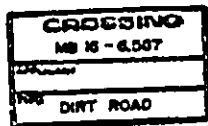


GOV'T. LOT 3  
SEC. 11-34-2

GOV'T. LOT 4  
SEC. 11-34-2

VOL 913 PAGE 455





RA-931

SR 536

GOV'T. LOT 3  
SEC. 2-34-2

SLOUGH

The South 330 feet of the East 660 feet  
of the southeast 1/4 of the southeast 1/4  
of Section 3, Twp 34 N., R. 2 E., W. 4 M.

ASW-136

WEST

GOV'T. LOT 5  
SEC. 11-34-2

3007110049

VOL 913 PAGE 456